B6800-1A

NUEXCO

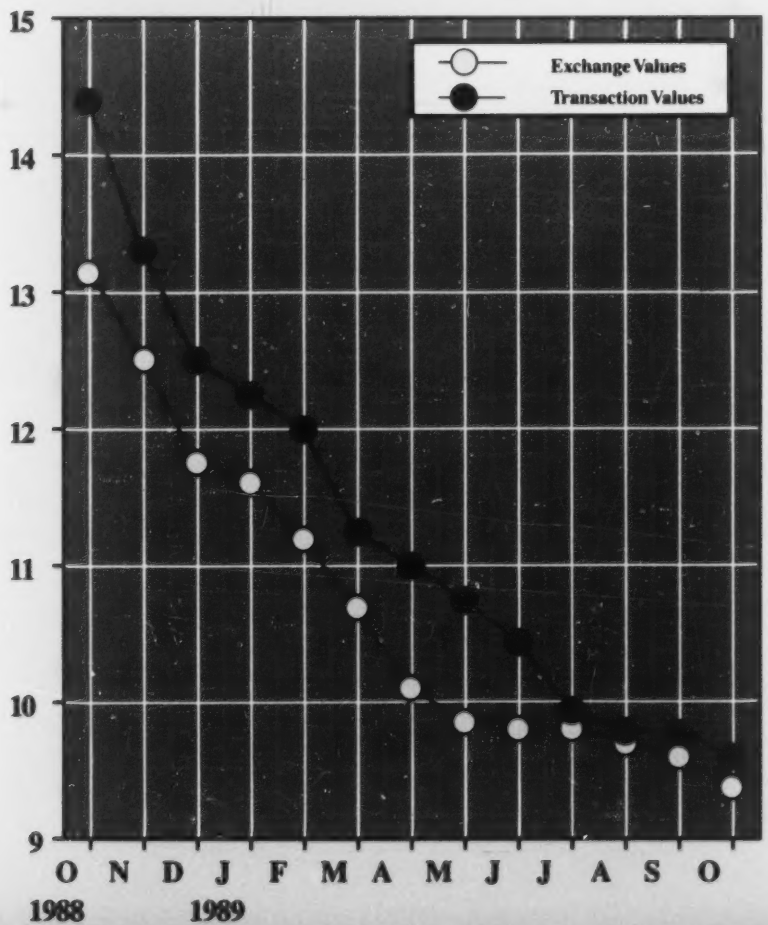
Monthly Report

November 1989 Number 255

Status of US High-Level Waste Program 15

Interview With First Deputy Minister of the Soviet Ministry of Atomic Energy and Industry 21

The Euratom Supply Agency 25



NUEXCO

INTERNATIONAL HEADQUARTERS

Three Park Central, Suite 900
1515 Arapahoe Street
Denver, Colorado 80202 USA

Telephone: (303) 899-4500
Telecopy: (303) 899-4555
Telex: 450202 (NUEXCO)

SERVICE LOCATIONS

DENVER, COLORADO, USA

Three Park Central, Suite 900
1515 Arapahoe Street
Denver, Colorado 80202
Telephone: (303) 899-4500
Telefax: (303) 899-4555
Telex: 450202 (NUEXCO)

WASHINGTON, D.C., USA

11 Dupont Circle, Suite 505
Washington, D.C. 20036
Telephone: (202) 328-9250
Telefax: (202) 328-6699
Telex: 248253 (NUEXCO DC)

ZURICH, SWITZERLAND

Leberngasse 15
4603 Olten
Switzerland
Telephone: (41-62) 320032
Telefax: (41-62) 321450
Telex: 981600 (NUXCH)

SAN FRANCISCO, CALIFORNIA, USA

Building 1, Suite 105
3000 Sand Hill Road
Menlo Park, California 94025
Telephone: (415) 854-1510
Telefax: (415) 854-2115
Telex: 470674 (NUEXCO SF)

HONG KONG

1403 Shui On Centre
6-8 Harbour Road, Wanchai
Hong Kong
Telephone: (852-5) 865-1418
Telefax: (852-5) 865-2721
Telex: 67206 (CNITC)

GENEVA, SWITZERLAND

13 chemin du Levant
01210 Ferney-Voltaire
France
Telephone: (33-50) 428035
Telefax: (33-50) 428526
Telex: 385288 (NUEXCO F)

SERVICE ENTITIES

NUEXCO (Headquarters)	Oren L. Benton, Chief Executive Officer
NUEXCO International Corporation	Charles H. Peterson, President
NUEXCO Trading Corporation	Earl E. Hoellen, President
NUEXCO Exchange AG	Hans W. Vogt, Managing Director
NUEXCO Information Services Company	Charles H. Peterson, President
NUEXCO Asia, Limited	Gerald L. Murdock, Managing Director

NOTICE

This Report is prepared especially for Subscribers and is furnished to them for their use only. Except for internal use by Subscribers, no part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of NUEXCO. Neither this Report, nor copies of any portion thereof, may be lent, sold or given to non-Subscribers.

The information in this Report was gathered from sources NUEXCO believes to be accurate. However, NUEXCO makes no warranty, express or implied, and assumes no legal liability or responsibility for the accuracy, completeness or usefulness of any information contained herein.

© 1989 NUEXCO Services Ltd.

ISSN 0742-4582

NUEXCO

NUEXCO Monthly Report

November 1989
No. 255

Managing Editor:
R. Wesley Miller

Director-Market Analysis:
Treva E. King

Editor:
France Addington-Lee

Supply Analysis:
Thomas C. Pool

Demand Analysis:
John M. Vallance

Market Analysis:
David S. Schramm

Research Services:
Carolyn B. McCants

Subscription Services:
Lori C. Mattics

Washington Focus:
Linda L. Gunter

Published by:
NUEXCO
Three Park Central, Suite 900
1515 Arapahoe Street
Denver, Colorado 80202
Telephone: (303) 899-4500
Telefax: (303) 899-4555
Telex: (303) 450202 (NUEXCO)

Other NUEXCO Publications: Annual Review, Uranium Market Study; International Directory of Nuclear Utilities (IDNU), International Directory of Uranium Producers (IDUP)

TABLE OF CONTENTS

Pricing — 1
- NUEXCO Market Values
- Monthly Review of Natural Uranium, Conversion, Enriched Uranium, and SWU markets

Current Market Data — 4
- NUEXCO Market Values in Selected Currencies
- Recent Transactions
- Supply and Demand Tables

Recent Developments — 13
- Republic of South Africa
- USA
- Washington Focus
- October Nuclear Fuel Industry Developments

Interview — 21
- Soviet Minister of Atomic Energy and Industry

Focus — 25
- Euratom Supply Agency

Raw Materials — 30
- Third Quarter 1989 South Africa Production

Historical Market Data — 31
- Graph of Exchange Value and Transaction Value
- Historical Exchange Values and Transaction Values
- Historical Conversion Values and UF_6 Values
- Graph of World Uranium Production
- Graph of World Uranium Demand
- US Uranium Marketing Activities Statistics
- Volume and Price of Uranium Deliveries to the European Community

Government Statistics — 38
- Australia
- Canada
- South Africa
- USA

Nuclear Industry Calendar — 42

© NUEXCO 1989

To Our Readers

We are pleased to announce that Mr. Joe Friscia has joined the CONCORD Group and NUEXCO. Joe has been involved in the international power systems business for over 25 years, and has wide experience ranging from power distribution to nuclear power systems and fuel.

After receiving his Master's degree in Nuclear Engineering from Georgia Institute of Technology, Joe joined General Electric's Atomic Power Equipment Department in California. In 1962 he began his international activities with GE in New York as a sales engineer working with European nuclear plant proposals.

From 1967 to 1979, Joe marketed nuclear power plants and fuel in Italy, and was very active in marketing efforts in Switzerland, Spain, Yugoslavia, and South Africa. He became Manager, International Marketing-Europe for GE in 1980, and was responsible for GE's commercial activities with European nuclear clients for the next seven years.

Joe will become active with a number of businesses of the CONCORD Group, including NUEXCO, and will be based in Menlo Park. We welcome Joe to our organization.

© NUEXCO 1989

MARKET VALUES SUMMARY

October 31, 1989	Market Values	Active Supply[1] (thousands)	Active Demand[1] (thousands)
EXCHANGE VALUE[1]	$9.40/lb U_3O_8	7,880[2]	5,855[2]
UF_6 VALUE[2]	$28.25/kg U as UF_6		
LOAN RATE[3]	3.5%/annum	7,660	0
CONVERSION VALUE[4]	$1.80/lb U as UF_6	0	270
SWU VALUE[5] 0.3 tails assay:	$59/SWU	1,530	570

	$/lb. U_3O_8	Millions of Pounds	Number of Transactions	Number of Months
TRANSACTION VALUE[6]	9.65	2.5	17	4

[1]Supply and demand tables in the *Current Market Data* section of this Report detail the numbers for each category.
[2]For both uranium concentrates and uranium hexafluoride.

DEFINITIONS

1. The **Exchange Value** is Nuexco's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.
2. The **UF_6 Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.
3. The **Loan Rate** is Nuexco's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.
4. The **Conversion Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.
5. The **SWU Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.
6. The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:
   a. Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;
   b. At least ten transactions;
   c. Transactions involving a sum total of at least 2 million pounds U_3O_8 equivalent.

The sample time is extended as necessary to include these minima. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

DERIVATIONS AND COMMENTS

1. All Market Values are based on:
   a. Data from recently completed transactions.
   b. Data from pending transactions.
   c. Firm bids to buy or borrow, and firm offers to sell or lend.
   d. Prices purchasers or rates borrowers have expressed a willingness to pay, but for which Nuexco is not aware of firm bids to buy or borrow, and prices sellers or rates lenders have expressed a willingness to accept, but for which Nuexco is not aware of firm offers to sell or lend.
2. Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these Market Values.
3. In the determination of prices, Nuexco does not consider transportation charges other than those customarily provided by suppliers.
4. The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
5. For the SWU Value, Nuexco converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight percent U^{235} and a product assay of 3.0 weight-percent U^{235}, assuming feed costs corresponding to the Nuexco Exchange and Conversion Values determined as of the same date.
6. In calculating the Transaction Value, Nuexco does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future Exchange Values or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it cannot currently be determined.

© NUEXCO 1989

NATURAL URANIUM AND SPOT CONVERSION

(All data as of October 31, 1989)

Increasing supply, competitive offers, and falling prices characterized the nuclear fuel market in October. All NUEXCO market values except for the Loan Rate declined, and the UF6, Conversion, and SWU Values each fell by more than five percent. Suppliers aggressively pursued all sales opportunities, resulting in three U_3O_8 and three UF6 sales for near-term delivery. Spot market volume totalled approximately 1.1 million pounds U_3O_8 equivalent. In other segments of the market, two spot conversion sales, two natural uranium loans, and two SWU sales are reported.

The **Exchange Value** declined to **$9.40** per pound U_3O_8 from $9.60 last month. Three natural uranium concentrate sales are reported, totalling more than 600 thousand pounds U_3O_8. Two utilities and one intermediary were buyers in these transactions. Most of these parties were US entities, and the majority of the remaining active demand is also accounted for by US buyers. As has been the case for some time, demand is largely discretionary and the active category includes a number of uranium producers.

The earliest October sale took place at a price above the current Exchange Value, while prices for the next two sales were lower and more in line with the current Exchange Value. Several utilities received more than twenty proposals in response to bid requests, and a number of suppliers resubmitted lower-priced offers.

Two additional U_3O_8 sales are included in the Transaction Table on page 6, but neither contributed to this month's spot market volume since they both took place earlier in the year.

* * *

The **UF6 Value** declined five percent this month from $29.75 to **$28.25** as sellers suddenly became very aggressive. In an unusually active month for UF6, three near-term sales are reported. One purchaser was European, while the other two were US entities. Prices in two of the sales were within two percent of the current UF6 Value. This month's buying activity clearly reflects a weakened UF6 market, and perceptions that substantial material is still available for sale continue to spur competition.

* * *

Active supply of natural uranium increased by approximately 2.7 million pounds U_3O_8 equivalent to **7.9 million pounds**. **Active demand** was **5.9 million pounds**, up from 4.5 million pounds the previous month. The new **supply/demand ratio** is **1.3 to 1**, slightly higher than last month's ratio of 1.2 to 1.

Should certain large suppliers, such as China, re-enter the market, and if Namibian uranium becomes politically acceptable in the coming months as expected (see article on page 13), active supply could increase substantially.

A surge in buying activity remains more remote, as discretionary buyers dominate the demand side. Many potential buyers have indicated that they are not likely to reenter the market for discretionary purchases until the market shows indications of a price increase.

* * *

The **Transaction Value** fell $0.15 to **$9.65**. Its calculation includes 17 transactions (six from this month) occurring over four months and totalling approximately 2.5 million pounds U_3O_8 equivalent. The calculation covers a four month period in order to satisfy the requirement that the Transaction Value include at least two million pounds.

* * *

The **Loan Rate** is unchanged at **3.5 percent** per annum. One loan transaction involving UF6 is reported at or near the Loan Rate. Loan supply is down by more than one million pounds from last month.

© NUEXCO 1989

The **Conversion Value** declined from $1.90 to **$1.80**, the largest drop in over a year. Two conversion sales are reported, and both took place at or near the Conversion Value. The distinction between the primary and secondary conversion markets continues to diminish in the case of spot opportunities, as primary converters are now competing aggressively with other suppliers for near-term sales. Inventories of EUP are also affecting the conversion market, as conversion is now readily available through deenrichment and deconversion transactions. With little current demand for spot conversion, some suppliers, in order to generate sales, are making unsolicited offers.

ENRICHMENT

The **SWU Value** registered its sharpest drop in two years, falling from $63 to **$59** per SWU. Two SWU sales are reported: one involving a small quantity at an undisclosed price for near-term delivery, and another for longer-term delivery.

Several utilities are evaluating SWU offers at or near the current SWU Value, and one US utility is expected to make a decision in early November. This sale is for a substantial quantity of EUP and will likely validate current market levels. The availability of a large quantities of SWU has increased competition, and several buyers have received increasingly attractive offers. ■

NOTICE OF CORRECTION

Please note the following corrections to the Historical Transaction Values section of the Monthly Report, as listed on page 33.

Date	Error	Correction
August 1980	$31.30	$31.60
May 1986	$17.05	$17.15
May 1989	$10.80	$10.75

© NUEXCO 1989

NUEXCO

CURRENT MARKET DATA

EXCHANGE VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)
Australia (dollar)	12.01	12.42	15.98	31.21	32.30	41.54
Belgium (comm. franc)	362.24	379.30	489.21	941.73	986.09	1,272
Canada (dollar)	11.03	11.33	15.84	28.68	29.47	41.17
EEC (ecu)	8.42	8.77	11.33	21.89	22.80	29.45
Finland (markka)	39.93	41.27	55.32	103.81	107.30	143.82
France (franc)	58.57	61.22	79.65	152.26	159.17	207.07
FRG (mark)	17.25	18.06	23.32	44.84	46.95	60.62
Italy (lira)	12,663	13,149	17,346	32,922	34,184	45,096
Japan (yen)	1,334	1,347	1,653	3,468	3,503	4,296
Netherlands (guilder)	19.47	20.39	26.29	50.61	53.00	68.35
South Africa (rand)	24.73	26.27	32.15	64.29	68.28	83.59
Spain (peseta)	1,098	1,155	1,545	2,855	3,004	4,015
Sweden (krona)	60.22	61.98	81.02	156.55	161.12	210.64
Switzerland (franc)	15.10	15.65	18.93	39.25	40.69	49.21
UK (pound)	5.94	5.96	7.42	15.45	15.48	19.30
US (dollar)	9.40	9.60	13.15	24.44	24.96	34.19

TRANSACTION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)
Australia (dollar)	12.32	12.68	17.50	32.04	32.97	45.49
Belgium (comm. franc)	371.87	387.20	535.71	966.78	1,007	1,393
Canada (dollar)	11.32	11.57	17.34	29.44	30.08	45.08
EEC (ecu)	8.64	8.95	12.41	22.47	23.28	32.25
Finland (markka)	40.99	42.13	60.58	106.58	109.53	157.50
France (franc)	60.12	62.50	87.22	156.31	162.49	226.75
FRG (mark)	17.71	18.43	25.53	46.03	47.93	66.38
Italy (lira)	13,000	13,423	18,995	33,797	34,896	49,382
Japan (yen)	1,369	1,375	1,810	3,560	3,576	4,705
Netherlands (guilder)	19.99	20.81	28.79	51.96	54.10	74.84
South Africa (rand)	25.39	26.81	35.21	66.00	69.71	91.53
Spain (peseta)	1,127	1,179	1,691	2,930	3,066	4,397
Sweden (krona)	61.82	63.27	88.72	160.72	164.48	230.66
Switzerland (franc)	15.50	15.98	20.73	40.30	41.54	53.89
UK (pound)	6.10	6.08	8.13	15.86	15.81	21.13
US (dollar)	9.65	9.80	14.40	25.09	25.48	37.44

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

© NUEXCO 1989

CONVERSION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb U as UF_6			per kg U as UF_6		
	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)	This Month (Oct 31, 1989)	Last Month (Sept 30, 1989)	12 Months Ago (Oct 31, 1988)
Australia (dollar)	2.30	2.46	2.37	5.07	5.42	5.22
Belgium (comm. franc)	69.36	75.07	72.54	152.92	165.50	159.93
Canada (dollar)	2.11	2.24	2.35	4.66	4.95	5.18
EEC (ecu)	1.61	1.74	1.68	3.55	3.83	3.70
Finland (markka)	7.65	8.17	8.20	16.86	18.01	18.09
France (franc)	11.21	12.12	11.81	24.72	26.71	26.04
FRG (mark)	3.30	3.57	3.46	7.28	7.88	7.62
Italy (lira)	2,425	2,602	2,572	5,346	5,737	5,670
Japan (yen)	255.43	266.67	245.07	563.12	587.90	540.28
Netherlands (guilder)	3.73	4.03	3.90	8.22	8.89	8.59
South Africa (rand)	4.74	5.20	4.77	10.44	11.46	10.51
Spain (peseta)	210.26	228.67	229.03	463.53	504.13	504.93
Sweden (krona)	11.53	12.27	12.01	25.42	27.04	26.49
Switzerland (franc)	2.89	3.10	2.81	6.37	6.83	6.19
UK (pound)	1.14	1.18	1.10	2.51	2.60	2.43
US (dollar)	1.80	1.90	1.95	3.97	4.19	4.30

SWU VALUE AND UF_6 VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

	SWU Value at 0.30% Tails Assay This Month (Oct 31, 1989)	SWU Value at 0.30% Tails Assay Last Month (Sept 30, 1989)	UF_6 Value per kg U as UF_6 This Month (Oct 31, 1989)	UF_6 Value per kg U asUF_6 Last Month (Sept 30, 1989)
Australia (dollar)	75.35	81.53	36.07	38.50
Belgium (comm. franc)	2,274	2,489	1,089	1,175
Canada (dollar)	69.24	74.38	33.15	35.12
EEC (ecu)	52.84	57.55	25.29	27.17
Finland (markka)	250.64	270.85	120.00	127.90
France (franc)	367.60	401.79	176.01	189.73
FRG (mark)	108.26	118.51	51.83	55.96
Italy (lira)	79,483	86,290	38,057	40,748
Japan (yen)	8,372	8,842	4,009	4,175
Netherlands (guilder)	122.20	133.78	58.51	63.17
South Africa (rand)	155.22	172.37	74.32	81.39
Spain (peseta)	6,892	7,582	3,300	3,580
Sweden (krona)	377.96	406.71	180.97	192.05
Switzerland (franc)	94.76	102.72	45.37	48.50
UK (pound)	37.31	39.08	17.86	18.45
US (dollar)	59.00	63.00	28.25	29.75

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

• NUEXCO 1989

NUEXCO

CURRENT MARKET DATA

RECENT TRANSACTIONS[1]

URANIUM SALES

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U_3O_8 equivalent)	Approximate Price Range[2] as Percent of Current Exchange or UF_6 Value	Seller	Buyer	Remarks
4636	1989	601-1,000	103-107	R[3]	Utility	Transaction Occurred Earlier in 1989
4669	1990	101–300	98-102	Intermediary	Utility	UF_6
4670	1990	101–300	98-102	Intermediary	Utility	UF_6
4671	1990	50–100	103-107	Intermediary	Intermediary	
4672	1990	301-600	103-107	Intermediary	Utility	UF_6
4674	1989	101–300	98-102	Intermediary	Intermediary	
4679	1990	101–300	98-102	Intermediary	Utility	
4684	1990-99	1,001–3,000	R[3]	Producer	Utility	Transaction Occurred Earlier in 1989. Base Price Escalated

[1] Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.
[2] The range reflects five percentage points (inclusive) per grouping, centered about the middle of the range.
[3] The notation R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

• NUEXCO 1989

LOAN TRANSACTIONS[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U_3O_8 equivalent)	Approximate Price Range[2] as Percent of Current Loan Rate	Lender	Borrower	Remarks
4676	1989	101-300	98-102	Utility	Intermediary	UF_6

CONVERSION SERVICES SPOT MARKET SALES[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U equivalent)	Approximate Price Range[2] as Percent of Current C.V.	Seller	Buyer	Remarks
4678	1990	101-300	98-102	R[3]	Utility	
4683	1990	301–600	103-107	Converter	Utility	

ENRICHMENT SERVICES SECONDARY MARKET SALES[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity[4] (thousand SWUs)	Approximate Price Range[2] as Percent of Current SWU Value[5]	Seller	Buyer	Remarks
4675	1992-94	101-300	R[3]	Intermediary	Utility	
4681	1990	Less than 50	R[3]	Intermediary	R[3]	

[1] Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.
[2] The range reflects five percentage points (inclusive) per grouping, centered about the middle of the range.
[3] The notation R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.
[4] If tails assay is unknown or unspecified, NUEXCO's calculation of SWU quantity assumes 0.30 w/o tails assay.
[5] Prices are usually normalized to 0.30% tails assay. Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts from a reference price (e.g., X dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

• NUEXCO 1989

NUEXCO

CURRENT MARKET DATA

URANIUM SUPPLY
(October 31, 1989)

NUEXCO Project Number	Delivery Period[1] (Thousand Pounds of U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale			
ACTIVE			
88-1001	250	—	1989
88-1026	150	—	1989
89-1001*	1,300	1,000 per year	1989-90, UF_6
89-1076	500	250 per year	1990 on
89-1156	200	—	1989
89-1180	1,000	—	1989
89-1188*	400	—	1989
89-1194	100	—	1989-90
89-1200	300	—	1990
89-1201*	2,000	—	1989
89-1209*	400	400 per year	1990-93
89-5000A*	1,280	—	1989, UF_6
Total	**7,880**		
INACTIVE			
88-1081	340	—	1990, UF_6
89-1029	1,200	300 per year	1989-98
89-1173	1,000	—	1990
87-1005*	—	250 per year	1990-95
87-1109*	—	350 per year	1990-on
87-1123*	—	1,000 per year	1990-on
88-1157*	—	1,000 per year	1990 on, UF_6
Total	**2,540**		

* New or revised since last month.
[1] Measured from the date of this Report.
[2] For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 87-1000.

© NUEXCO 1989

URANIUM DEMAND
(October 31, 1989)

NUEXCO Project Number	Delivery Period[1] (Thousand Pounds of U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Inquiries to Purchase:			
ACTIVE			
89-1068	750	—	1989
89-1133*	1,000	—	1990
89-1142A	800	—	1990, UF_6c
89-1164	670	—	1990
89-1175	170	170 per year	1990-91
89-1183	400	—	1990
89-1199	150	—	1990
89-1208*	95	—	1990
89-1210*	700	—	1990
89-1218*	1,000	1,000 per year	1990-93
89-1224*	120	—	1989
88-1227	—	1,600	1990-95, U_3O_8/UF_6
89-1090	—	150 per year	1991-96
89-1172	--	500 per year	1992-on
89-1176	—	600 per year	1991-96
89-1192	—	1,200	1992-97
Total	**5,855**		
INACTIVE			
89-1067	**500**	**—**	**1989**
89-1163	**1,000**	**—**	**1990**
89-1167	**350**	**350 per year**	**1990-94**
89-1187	**325**	**—**	**1990, UF_6**
89-1189*	**500**	**—**	**1989-90**
Total	**2,675**		

* New or revised since last month.
[1] Measured from the date of this Report.
[2] For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 89-1130, 89-1132, 89-1174, 89-1179, 89-1195, 89-1202, 89-1204, 89-1207.

© NUEXCO 1989

NUEXCO

CURRENT MARKET DATA

LOAN SUPPLY AND DEMAND
(October 31, 1989)

NUEXCO Project Number	Delivery Period[1] (Thousand Pounds of U_3O_8) Within 1 Year	Beyond 1 Year	Remarks
Available for Loan:			
ACTIVE			
87-1167	460	—	UF_6
88-1182	4,000	—	U_3O_8/UF_6
89-1077	500	—	U_3O_8
89-1184	200	—	U_3O_8
89-1186	200	—	U_3O_8
89-1196	1,300	—	UF_6
89-1206*	300	—	U_3O_8
89-1225*	700	—	U_3O_8
Total	**7,660**		
INACTIVE			
None reported			
Available to Borrow:			
ACTIVE			
None reported			
INACTIVE			
89-1213*	260	—	U_3O_8
Total	**260**		

* New or revised since last month.
[1] Measured from the date of this Report.
Projects removed since last month: 87-1031.

© NUEXCO 1989

CONVERSION SUPPLY AND DEMAND
(October 31, 1989)

NUEXCO Project Number	Delivery Period[1] (Thousand Pounds of U as UF_6) Within 3 Years	Beyond 3 Years	Remarks
Available for Sale			
ACTIVE			
No conversion supply is reported			
Inquiries to Purchase			
ACTIVE			
89-1212*	270	—	1990
Total	**270**		
INACTIVE			
None reported			

* New or revised since last month.
[1] Measured from the date of this Report.
Projects removed since last month: 89-1197.

© NUEXCO 1989

NUEXCO

CURRENT MARKET DATA

SWU SUPPLY AND DEMAND
(October 31, 1989)

NUEXCO Project Number	Delivery Period[1] (Thousand SWUs) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale			
ACTIVE			
88-1082*	25	—	1989
88-1096*	190	—	1990
88-1200	15	—	1989
88-1210*	300	—	1990
89-5000B	1,000	—	1989
Total	**1,530**		
INACTIVE			
87-1128	360	—	1989
Total	**360**		
Inquiries to Purchase			
ACTIVE			
88-1236	250	—	1990-94
89-1142B	300	—	1990, UF6e
89-1211*	20	—	1990
88-1061		500	1991-95
89-1203		60	1991
89-1214*		80	1991
Total	**570**		
INACTIVE			
89-1043	50	—	1990
89-1047		600	1991-95
Total	**50**		

* New or revised since last month.
[1] Measured from the date of this Report.
[2] For delivery within one year. This category excludes SWU deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 89-1118, 89-1135.

© NUEXCO 1989

RECENT DEVELOPMENTS

SOUTH AFRICA

Anti-Apartheid Sanctions Update

F.W. de Klerk, South Africa's new president, has avoided further tightening of sanctions against the Republic—at least for the present. Since his National Party's victory in the September 6 Parliamentary elections, De Klerk has already carried out some of his pre-election promises. Seizing the initiative, he suddenly released eight of the nine most prominent political prisoners. Of that group only Nelson Mandela remains in custody, and his release is possible in the near future. By releasing virtually the entire old-guard leadership of the African National Congress (ANC) at once, and by allowing the largest anti-apartheid demonstration in history to take place on October 29, De Klerk has allowed the *de facto* unbanning of the ANC.

Because of such actions and the likelihood of additional concessions to the black majority, the Bush Administration has indicated reluctance to impose further sanctions on South Africa at this time. However, unless De Klerk takes substantive action by June 1990 to end apartheid, the USA may consider stronger measures.

US Senate Committee Hearing

The Administration's views, among others, were presented at the October 3, 1989 Senate Foreign Relations Committee hearing on US policy options towards South Africa. Chairman Claiborne Pell and most of the committee members (Senators Kerry, Simon, Cranston, Sarbanes, Helms, Kassebaum, and Sanford) expressed varying degrees of support for either tightening the sanctions or waiting to see what the new De Klerk government would do.

Senator Kennedy was the lead witness at the hearing, opposing the South African government's apartheid policy, and criticizing the Bush Administration for its lack of support for additional sanctions. Other testimony was presented from a Gallup poll commissioned by the South African Chamber of Mines which indicated that most blacks in South Africa oppose sanctions.

Mr. Herman J. Cohen, Assistant Secretary of State for African Affairs, reported the Bush Administration's wish to give the newly-elected government in South Africa time to demonstrate its good intentions to end apartheid. Mr. Cohen said the Administration's main goal at the moment is to have all parties enter into a dialogue. The Administration intends to monitor the situation, while following these four principles:

- Work toward fundamental political change in South Africa leading to an end to apartheid,
- Fully enforce the Anti-Apartheid Act,
- Support economic development in South Africa and regional economic development,
- Consult with all parties concerned—the South African government, black groups, neighboring countries, US allies, and Congress.

Although the USA has given de Klerk a reprieve from additional sanctions, the full *removal* of sanctions is unlikely until after elections involving all South Africans take place.

Sanctions Against Namibia

Regarding Namibia, Mr. Cohen recommended the removal of economic sanctions against Namibia after the United Nations certifies the November elections, and added that he "is aware of a British-owned uranium mine [Rössing] which will shortly be forced to lay off workers if they can't export uranium." He also noted that the State Department had initially opposed extending sanctions to Namibia, since apartheid is a creation of South Africa, not of the Namibian people.

Although the State Department has issued a letter stating it will lift US sanctions imposed by the Comprehensive Anti-Apartheid Act of 1986 against Namibia once it becomes independent, as a precaution against unanticipated delays in removing these sanctions, the State Department has been preparing language to attach to a bill expected to pass Congress this session. That rider will also reflect the State Department's position that Namibian independence will constitute sufficient justification for lifting of US sanctions.

© NUEXCO 1989

NUEXCO

Commonwealth Nations Discuss Sanctions

Representatives from the 49 Commonwealth nations also discussed sanctions against South Africa in October, and, with the exception of the United Kingdom (UK), all were in favor of harsher punitive measures. Australian Prime Minister Bob Hawke presented a particularly tough plan, which British Prime Minister Margaret Thatcher strongly opposed. The final joint Commonwealth statement represents a compromise of positions in which the Commonwealth's current sanctions against South Africa are to remain in effect.

Although De Klerk must convert his pre-election promises to action within six months in order to avoid stronger Commonwealth measures, these sanctions carry only symbolic significance. Japan, the Federal Republic of Germany, Britain, and the USA are South Africa's important trading partners, and the Commonwealth states in southern Africa will continue trading with South Africa out of economic necessity, regardless of additional Commonwealth sanctions.

Anticipated Political Changes

In the September 6 election, fully 71 percent of the votes were cast against the Conservative Party, whose current policies represented the mainstream of South African political thought as recently as ten to fifteen years ago. This, in connection with the surprising gain shown by the liberal Democratic Party, indicates that the electorate has clearly shifted to the left, and that the climate has improved for political reform. It is now up to De Klerk and the National Party to forestall the escalation of internal conflict and external sanctions. Three concrete moves are widely expected:

- eliminating the banning of all political associations,
- releasing Nelson Mandela, and
- relaxing the three-year-old state of emergency under which civil liberties have been suspended (although pressure to completely remove the state of emergency is expected to mount).

With the world waiting impatiently for substantial political reform, De Klerk now has a unique but short-lived opportunity to promote peace and renewed acceptance of his country. ■

USA

Sundance Conference

On October 20-22, the Institute for Resource Management, the organization founded by actor and environmentalist Robert Redford, sponsored a conference in Sundance, Utah entitled "Should Nuclear Power in the United States be Revitalized?". The primary purpose was to bring together people of various backgrounds and of different opinions to work towards a common viewpoint. The main stimulus for the conference was an earlier meeting in Sundance concerning the greenhouse effect, and the prospect that nuclear could contribute to its solution.

Almost 50 prominent representatives from the nuclear industry, the government, environmentalist organizations, and other energy experts were invited to the conference. As expected, opinions varied widely, although they appeared to fall into three main categories:

- Nuclear power would be needed in the future and advancing the technology and maintaining the option was in the national interest.
- Energy needs could be handled by conservation and improvements in energy efficiency (although there was difficulty in defining "conservation").
- Nuclear power should not proceed under any circumstances since it increases the risk of nuclear proliferation.

The majority of participants felt that the nuclear option would be needed in the future, and that an improved generation of plants was needed to gain public acceptance for later expansion. ABB Atom, Combustion Engineering, General Atomics, General Electric, and Westinghouse discussed their efforts to develop a new generation of smaller, simpler, cheaper, and less operator-dependent reactors.

Howard Allen, Chairman of Southern California Edison, noted the need to address the greenhouse problem, and added that, although his company is experimenting with a number of alternative energy sources and conservation, he saw no alternative to the continued use of nuclear.

Although no consensus emerged from the weekend meeting, a dialogue has clearly been established among industry professionals, and the way prepared for further discussions on nuclear power's future. Perhaps the next meeting should begin where this one left off—assuming that nuclear power is needed, and discussing what will make the nuclear industry acceptable to all and what specific actions can be taken. ■

© NUEXCO 1989

US High Level Waste Program

In 1982 Congress passed the Nuclear Waste Policy Act to establish a program for the permanent disposal of high level nuclear waste. Because of continuing opposition to DOE's efforts to select two sites (one in the eastern part and one in the western part of the U.S) and the expense and time required to look at three sites for each repository, Congress amended the act in 1987 to require investigation of only one site—Yucca Mountain, Nevada. This amended Act also requires DOE to study the need for a monitored retrievable storage facility (MRS) to receive, package, and temporarily store the waste prior to its disposal in the permanent repository. Although Congress had intended to help DOE move forward on site characterization at Yucca Mountain, since 1987 the program has slipped further and further behind schedule.

This summer the NRC issued its Waste Confidence Review confirming that spent fuel can be stored safely in reactor storage pools or at an on-site or off-site independent spent fuel storage facility for at least 30 years beyond the reactor's operational life without any safety or significant environmental impacts. Under the NWPA, DOE was scheduled to begin accepting utility waste in 1998 and the repository to open in 2003. The original timetable called for site characterization to begin last spring, with work on construction of the first exploratory shaft to begin in August of this year. Various problems including lawsuits and delays in obtaining the necessary permits from the state of Nevada, have postponed the start of shaft construction until some time next year, assuming it can obtain the necessary licenses and site permits.

The NRC publicly acknowledged what privately has been known in the industry for some time—DOE is now significantly behind schedule. Instead of continuing the unrealistic timetable legislated, the NRC recommends DOE plan for repository operation in "the first quarter of the 21st century" rather than a specific year such as 2007.

Major Problems Facing Waste Program

DOE's high level waste program management is inundated with problems. Having acknowledged it is behind schedule, DOE is confronted with a variety of issues, all of which require more time to resolve. In the meantime, Congress and DOE's clients, the nuclear utilities, are rapidly running out of patience. Some of the most difficult problems facing DOE include:

- refusal by the State of Nevada to cooperate on any aspect of the program except to take federal government funds to complete its own independent scientific review of DOE's work,
- Congressional cuts in DOE's funding indicating displeasure with DOE's management of the program,
- a lawsuit brought by TRW to prevent the awarding of the "super gorilla" operations and management contract to Bechtel,
- various environmental issues such as the welfare of the desert turtle and pupfish,
- NRC staff concerns with technical issues regarding DOE's site characterization plans, and
- the uncertain status of the MRS which DOE continues to insist is an integral part of the entire waste management program.

Opposition from the State of Nevada

Governor Bob Miller of Nevada held a press conference September 19, 1989 to claim that resolutions passed by the Nevada state legislature with his signature constitute the State's "notice of disapproval". Under the Nuclear Waste Policy Amendments Act of 1987, a state may exercise a veto and refuse to accept the nuclear waste. If Congress does not act to negate the veto within 90 days, an alternative site must be chosen.

The nuclear industry interprets the Act's intent for the state to exercise its veto *after* the site has been characterized and recommended to the President. Since these actions have not been completed yet, the State's veto is premature. This puts DOE in the uncomfortable position of enforcing the law, since the NWPA requires DOE to proceed with characterization in Nevada, yet Nevada will not cooperate.

DOE is reviewing three possible courses of action:

- continue negotiations with the state,
- take the state to court to challenge the law, or,
- ask Congress to further amend the NWPA to circumvent Nevada's obstructionist tactics.

© NUEXCO 1989

Cuts in Congressional Funding

Congress has already expressed its dissatisfaction with DOE's management structure and "duplicative or unnecessary contractual arrangements" by cutting the funds appropriated for FY 1990 to $346 million. This is approximately $20 million below the current level of spending, but $154 million less than DOE initially requested. Congress "fenced in" $6 million of the $11 million appropriated for the State of Nevada's independent review of DOE's work. These funds can be allocated at the discretion of the Secretary of Energy if Nevada demonstrates good faith efforts to cooperate with DOE.

The conference report for the bill directs DOE to submit a report within 60 days (the end of November) describing how DOE plans to address Congressional concerns about schedule delays, management deficiencies, and lack of integrated contractor efforts. The waste program budget will also be cut (perhaps temporarily) by $18 million due to Gramm–Rudman .

TRW Lawsuit

DOE lost a major battle in the courts. The US Claims Court ruled that TRW, Inc., an unsuccessful bidder for the $1 billion management contract for Yucca Mountain, had been injured when DOE awarded the contract to Bechtel Management Systems Inc. DOE is permanently restrained from awarding the contract to anyone other than TRW. The court found that Sam Rousso, the acting director of the Office of Civilian Radioactive Waste Management (OCRWM), violated conflict of interest laws since he was formerly associated with one of Bechtel's subcontractors. DOE announced on October 23 it will appeal the Claims Court decision to "preserve its options".

DOE can now administer the program on its own or with selected contracting. The program is still without a permanent OCRWM Director, and no nomination has yet been submitted for the office, although several potential nominees names have circulated. DOE continues to believe that the court decision will not effect near term activity at the site. Current delays at the site are caused by a problem with quality assurance programs with site contractors and the lack of state environmental permits.

NRC Concerns with Site Characterization

The NRC staff has responded to DOE's draft site characterization plan, and in early August published its recommendations for comment. The NRC's major concerns remain the lack of a qualified quality assurance program, which is essential before beginning site characterization, and the adequacy of the exploratory shaft design and design control process.

A number of scientific issues are still subject to debate and will only be resolved by proceeding with site characterization. Some of these include:

- volcanism and seismic activity in the area,
- whether the water table could rise enough to flood the repository in the next 10,000 years,
- the lack of integration of the post-closure program (after the repository is sealed) with the waste package performance,
- the adequacy of the integration of the repository design with the SCP and the exploratory shaft design.

DOE has stated, however, that none of the objections are so damaging as to prevent it from continuing with its shaft design and other surface based testing.

The Nuclear Waste Technical Review Board, a Congressionally established independent review body, told the NRC on September 14 that DOE should drill additional exploratory shafts under the repository to study a fault which could make the site unsuitable for a permanent repository. The Board also recommended that DOE's current program is not flexible enough to respond to unexpected findings; DOE may not have an adequate method for assessing the value of scientific experts and; a systematic risk assessment for the repository has not been considered. They are expected to review various technical aspects of the program and report to Congress and DOE before the end of the year.

The NRC has issued a final rule on procedures for implementing the National Environmental Policy Act for the repository. NRC recognizes that DOE has the primary responsibility for evaluating environmental impacts but will determine if adopting DOE's final EIS is practical. Both DOE and NRC are proceeding without the benefit of EPA's final ground water standard with which the repository will have to comply.

DOE Progress

DOE has made some progress in relatively non-controversial areas such as establishing the Licensing Support System (LSS). DOE issued its first transportation report and authorized funds for the University of Nevada to review DOE's data. In addition, it has access to all land required for site characterization work.

© NUEXCO 1989

The Monitored Retrievable Storage Facility

When Congress passed amendments to the Nuclear Waste Policy Act (NWPA) it created the office of Nuclear Waste Negotiator and extended the deadline for the MRS Review Commission's report on the MRS to November 1, 1989. While acknowledging that an MRS will increase total costs for the waste management system, DOE continues to insist that an MRS is an essential and integral part of the program. Conceptually DOE prefers a facility which initially would receive, inspect, and store spent fuel until it could be shipped to a repository on dedicated trains. At a later stage the MRS could package and or consolidate fuel into disposal containers. However, the amendments to the NWPA impose a number of conditions before DOE may consider an MRS. The MRS Commission must first submit its report, and the MRS site may be chosen only after a repository site is recommended. Construction of the MRS cannot begin until after the NRC has issued a license for construction of the repository. These conditions were deliberate political linkages created by Congress so that an MRS could not become a *de facto* repository.

On November 1, the MRS Review Commission issued its recommendations to DOE on the need for an MRS. At a hearing the following day before the Senate Energy & Natural Resources Committee, the Commission stated that a linked MRS was not appropriate, but then recommended that two additional facilities—a Federal Emergency Storage facility (capacity 2,000 MT) and a User-funded Interim Storage Facility (capacity 5,000 MT)—be built. In addition, it suggested Congress revisit the issue in the year 2000 when perhaps the scientific as well as the political situation may have changed.

The Commission felt a storage facility would be beneficial, but because it can't be built until a repository site is selected, its economic benefit to utilities would be lost. Thus, a facility to handle only spent fuel from utilities without adequate on-site storage in 2006 was deemed essential. Since opponents of an MRS are primarily concerned that it will become a *de facto* repository, the Commission determined that a smaller facility would be more politically palatable. The Senator expressed concern about the lack of discussion in the report on the spent fuel cooling function an MRS would perform, and requested cost comparisons on an MRS, on-site storage at each utility, and additional interim facilities to replace an MRS.

Waste Program Restructuring

On October 17, several Congressmen, including Interior Committee Chairman Morris K. Udall (D-AZ) and Energy & Commerce Committee Chairman John D. Dingell wrote to Secretary Watkins to express "their dismay over the lack of progress on the nuclear waste program." They also expressed their concern that DOE appears to have no plan to address the state's refusal to give DOE the necessary site permits, and indicated they intend to hold oversight hearings in the next few months.

DOE is already rethinking its waste management program. A DOE waste program spokesman indicated a full scale review of the program is underway and that DOE hopes to announce its reorganization plans by the end of November.

Carl Gertz, Yucca Mountain Project Manager, in an internal memo made public, recommended a two-year moratorium on sub-surface tests, but continued surface testing on land controlled by the federal government in an effort to determine if the site is unsuitable and to offer further assurances to the state of DOE's technical credibility.

Conclusion

DOE is expected to announce in mid-November that it will delay opening the repository until 2010. While site characterization work has not begun, $3 billion has already been spent and utility contributions to the program continue to accumulate. All programmatic decisions, personnel nominations, and technical issues have been put on hold until the reorganization proposal is completed sometime in November.

Sen. Harry Reid, a Democrat from Nevada, recently described DOE as "inept" and "unprofessional" and expressed concern that DOE never puts the public health and safety first. With comments like this, it seems highly unlikely the state will ever willingly accept the repository.

Once Secretary Watkins has improved the "management" of the program, it remains to be seen whether progress can be made in solving America's high level nuclear waste storage problem. ■

© NUEXCO 1989

WASHINGTON FOCUS

October was a busy month for Congress, and although the Senate continued its work on appropriation bills, Congress was not able to pass a budget in time to prevent Gramm-Rudman from entering into effect on October 16. In addition, the Clean Air Act received expedited attention, and will probably be passed in some form by the end of the year. Both House and Senate subcommittees considered the air toxics section of the bill that includes radionuclides. Unless revised, it would exclude certain categories of pollutants from EPA oversight because they are adequately controlled by other federal laws. In this case it could relieve utilities from dual regulation by both the EPA and the NRC.

In other activity of interest to the nuclear fuel industry, the Senate Foreign Relations Committee held hearings on sanctions against South Africa; the House Science, Space and Technology Energy R&D subcommittee held another hearing on uranium enrichment; and the Department of Commerce released the results of its investigation into whether imports of uranium threaten the US national security; and EPA radionuclide regulations were issued on October 31.

Anti-Apartheid Sanctions Hearing

On October 3 the Senate Foreign Relations Committee held a hearing to take testimony on US policy options towards South Africa. Herman J. Cohen, Assistant Secretary for African Affairs at the State Department, testified that the Administration intends to give the newly-elected South African government until the summer of 1990 to develop a policy toward ending apartheid. The State Department would like the South African government to take the following steps toward ending apartheid: release all political prisoners and allow the return of all exiles; lift the state of emergency; and lift the ban on all political associations. Cohen also indicated a slight shift in government policy toward Namibia. He said Congress should lift economic sanctions against Namibia once the November elections have been certified by the United Nations.

Gramm-Rudman

Congress continued to work on a budget reconciliation bill, but there probably won't be a law before late November. Gramm-Rudman, the law requiring across-the-board cuts of $16.1 billion on most government spending if Congress has not reduced the deficit below the $110 billion ceiling, went into effect October 16. These calculations include DOE's uranium enrichment activities. The Office of Management & Budget has used DOE's net revenue of $1.325 billion—not its budget authority—and applied the 5.3 percent across-the-board reduction to cut back its spending authority by approximately $70 million. This cut could be reinstated if Congress passes a budget below the ceiling at a later time in the fiscal year. For example, if that happens in December, then DOE would have to reduce its spending for the two months Gramm-Rudman was in effect. If the reduction is permanent, which is possible given the current political posturing in Washington, DOE must allocate the reduced spending across all of its programs. Thus, AVLIS and other programmatic categories within the uranium enrichment budget would be affected proportionately. The $134 million appropriation for AVLIS, if cut by 5.3 percent, would be reduced by about $7 million to $127 million. Currently, it is not clear if DOE would have the discretion to allocate its 5.3 percent of the cut differently in order to spare AVLIS R&D.

The Washington Post reported on November 2 that there is growing sentiment from Republicans in Congress and certain officials in the Administration that a permanent sequester, i.e. making the spending cuts permanent, might be an acceptable alternative to allowing the Democrats to control the budget.

© NUEXCO 1989

Enrichment Legislation

Rep. Marilyn Lloyd's (D-TN) subcommittee held a hearing on uranium enrichment legislation on October 19. The committee heard testimony from four witnesses representing the National Taxpayers Union (NTU), the National Association of Regulatory Utility Commissioners (NARUC), the Uranium Producers Association (UPA), and Mr. Harold Seidman, an independent consultant. There is consensus that something needs to be done to allow DOE to compete effectively in the international enrichment market. The witnesses support some form of government corporation, but they do not agree upon other aspects of the legislation, such as the amount of money the corporation should return to the Treasury. The hearing concluded with no indications from Rep. Lloyd on whether she plans to hold additional hearings or begin markup of the bill. Two other House committees—Interior and Energy and Commerce—also must consider the bill before the House of Representatives will vote on any legislation.

National Security Study on Uranium Imports

The Commerce Department announced on October 23 its finding that imports of uranium into the USA pose no threat to national security. The study found that uranium is essential to the USA's national security, but that significant supplies are available either domestically in inventory, from future production, or from reliable imports. The Department also suggests one source of supply could be reprocessing of uranium tails.

Radionuclide Emissions Ruling

Following last minute high-level lobbying at the White House and at the EPA, it appears that the nuclear industry was successful in mitigating the harshest sections of the EPA's proposed rule on radionuclide emissions (see NUEXCO Report No. 250). Although the final language of the rule is not publicly available yet, industry sources indicate cautious optimism about the new regulation's effect on the nuclear industry.

The standard for emissions has been lowered from 25 mrem/year to 10 mrem/year effective dose equivalent—still a value most of the industry can tolerate. In a briefing given on November 1, the EPA admitted that 7 of the 15 operating underground uranium mines would be effected by this rule and thought that 5 might go out of business. In addition, it has granted a three-month stay of a portion of the rule affecting fuel cycle facilities because of its potential affect on some medical facilities' ability to use nuclear medicine. The EPA also said it will reconsider ways to reduce the regulatory burden of dual regulation of these facilities by both the EPA and the NRC. It is unclear whether "these facilities" include all facilities regulated by the NRC, or just the radiopharmaceutical companies. However, as long as this ambiguity exists, the nuclear industry can continue to challenge the scientific merits of EPA's criteria, and perhaps to prevail.

Questions still remain on the exact nature of the new radon source criteria implementation and on certain requirements for tailings cleanup operations, but these will be answered once the final rule becomes public. The American Mining Congress plans to file suit against the EPA over these new standards, and it is possible the industry will seek relief through legislation. The EPA received over 250 comments, many objecting that the proposed rule was based on outdated scientific rationale. ■

© NUEXCO 1989

NUEXCO

RECENT DEVELOPMENTS

Nuclear Fuel Industry Developments

OCTOBER

13 **Freeport-Uranium Recovery Co.** became the latest US producer to announce a **shutdown** of its uranium operations, and will place its **Sunshine Bridge** mine on standby until the market improves. Sunshine Bridge has produced about 400,000 pounds annually from by-product operations.

16 **Gramm-Rudman,** the law designed to reduce government spending if the federal deficit has not been reduced to $110 billion, went into effect.

18 Following a year-long study on the nation's nuclear industry, the **French government** reaffirmed its **commitment** to **nuclear power** while announcing plans to reevaluate some of its policies.

19 Repp. Marilyn Lloyd's Science, Space & Technology Subcommittee held its second **hearing** on **uranium enrichment restructuring** (HR 2480). Additional hearings may take place later this year.

23 The **US Department of Commerce study** on the potential threat to national security of **uranium imports** concluded that sufficient supplies exist to meet requirements during a national emergency. Section 232 of the Atomic Energy Act requires this study when imports exceed 37.5 percent of actual US uranium requirements for two consecutive years.

24 An **NRC** spokesman said the agency planned to **extend the operating lives of nuclear plants** to 50 or 60 years. Although the Atomic Energy Act only allows 40-year licenses, there are no restrictions on extensions.

27 **Rio Algom Mining Corp.**, the US subsidiary of Canada's Rio Algom Ltd., signed a letter of intent to purchase all the outstanding stock of **Uranium Resources, Inc.** (URI) for $66 million. The agreement is non-binding, however, and Denison Mines Ltd. is also reported to have made an offer to URI.

Following approval of **Seabrook's** emergency evacuation plan, the NRC staff recommended the Atomic Safety Licensing Board approve a full power license for the plant. The ASLB is expected to announce its recommendation to the NRC Commission by November 31.

© NUEXCO 1989

INTERVIEW WITH MR. BORIS V. NIKIPELOV

First Deputy Minister of the Ministry of Atomic Energy And Industry In The USSR

Techsnabexport's (TSE) increasing role in the nuclear fuel market has generated tremendous interest among market participants, especially in these times of glasnost and perestroika. In recent months, various Soviet officials have participated for the first time in several nuclear fuel industry conferences, discussing technical and commercial issues with unprecedented openness. Many previously unknown or misunderstood facts about Soviet nuclear fuel cycle activities have come to light. For example:

- *Although the Soviet Union began uranium enrichment in 1949 using gaseous diffusion, it actually pioneered the development of centrifuge technology, building its first pilot centrifuge plant in 1952. Full-scale industrial centrifuge operations began in 1959. (See NUEXCO's September Report, #253, page 15.)*
- *The USSR has a total centrifuge enrichment capacity of over ten million SWU per year, produced by modular facilities, each of which can produce about ten percent of the total.*
- *Although the Soviet centrifuge technology was originally developed for weapons production, it is now being used to furnish enrichment services for the commercial (civilian) nuclear power market. TSE handles all export sales on behalf of the Ministry of Atomic Energy and Industry.*
- *In recent years, TSE has offered spot contracts as well as near-term enrichment contracts (one to three years in length) to international customers. And TSE has been offering enriched product for sale since 1988.*

NUEXCO recently had the opportunity to interview ***Mr. Boris V. Nikipelov, First Deputy Minister of the Ministry of Atomic Energy and Industry (MAEI),*** *on the subject of TSE and its growing commercial presence in the international nuclear fuel market. Following are some excerpts from that interview.*

NUEXCO: Mr. Nikipelov, what is the relationship between Techsnabexport and your ministry?

MR. NIKIPELOV: The Ministry for Atomic Energy and Industry was established in 1989 by combining two Ministries: Atomic Energy and Medium Machine Building. The Ministry's primary mission is the building and operation of the commercial nuclear fuel cycle, from power stations to exploration, mining, milling and uranium recovery, conversion to UF_6, enrichment, fuel fabrication, spent fuel storage, reprocessing, and waste disposal. TSE, a foreign trade organization within MAEI, is most well known for its role in support of the Ministry's primary mission— the promotion of international trade in the goods and services associated with the *civilian* nuclear power business. But TSE's role goes far beyond nuclear power. It also represents the various industrial and research organizations of MAEI in their import-export activities.

—·—·—

NUEXCO: And what are MAEI's other activities?

MR. NIKIPELOV: In addition to the nuclear fuel cycle, the Ministry is responsible for nuclear instruments, including those used for medical research and radiation therapy. MAEI is responsible for fundamental research

© NUEXCO 1989

into nuclear physics, especially fusion and reactor safety, accelerator technology, and laser technology.

The Ministry also controls the production and marketing of alloying metals and non-metals, such as zirconium, beryllium, molybdenum, tantalum, rare earth elements, fluorine, and others which are used in the fuel cycle. Given its primary need to supply the fuel cycle, the Ministry also manufactures secondary products from these other raw materials. And in accordance with our nation's latest five-year economic plan, whose top priority is to improve availability of consumer goods, the Ministry has also acquired responsibility for development of the capability to manufacture dairy equipment and for the production of a number of durable consumer goods, such as videocassette recorders and other consumer electronics.

Thus, while TSE is known primarily for its sales of enriched uranium and SWU, its commercial officials also sell medical instruments, accelerators, lasers, rare earths, alloying elements, and related products.

—·—·—

NUEXCO: Although the Soviet Union made its first SWU deals with certain Western European utilities in 1973, TSE is unfamiliar to many utility fuel buyers. How would you respond to their concerns about the reliability of TSE as a supplier for their nuclear power plants?

MR. NIKIPELOV: Most importantly, we sincerely aim at open and mutually beneficial cooperation with our customers, whether in the nuclear fuel cycle or in our other activities. In particular, the history of TSE provides abundant evidence of our supply reliability, and we aim to maintain that record.

We recognize, however, that some potential customers may have some concern as a result of lack of information about the Soviet Union's nuclear fuel cycle capabilities. That is one important reason for our willingness to provide much more information than in the past.

We have over 15 years experience in the international nuclear fuel market, having concluded our first transactions in 1973. All of our customers since that time can attest to our on-time performance and that our product has always met quality standards. Several factors have contributed to our record of reliability:

- large enrichment capacity,
- high standards of technology and equipment,
- high degree of operating flexibility available from the use of centrifuge technology.

We would be happy to provide any of our prospective customers with any data necessary to confirm the reliability of our production and the quality of our technology, which exceeds world standards in many aspects. For example, our centrifuges can operate continuously for 15 years with a fault rate of only a few tenths of one percent per annum.

—·—·—

NUEXCO: That speaks well for the Soviet Union's product reliability and quality, but what about TSE's commercial reliability; that is, its reliability as a longer-term contract partner?

MR. NIKIPELOV: In addition to our large production capacity, our extensive long-term experience, and our well-developed technology, adding export sales to domestic demand makes for more stable operation of our facilities, so that factor is also taken into account. Gas centrifuges require low working inventories of UF_6, enabling a high degree of operating flexibility, such as when a customer wants to revise the final product or tails assay.

Customers find that TSE and the Ministry offer substantial flexibility in timing and quantity of deliveries. We are certainly sympathetic to a customer's need to adjust the terms of an existing contract, and will keep in mind the value of the long-term relationship as we work toward a mutually agreeable solution.

—·—·—

NUEXCO: You mentioned "well-developed technology" and "low working inventories", Mr. Nikipelov. What can you tell us about TSE's production costs?

MR. NIKIPELOV: A number of factors give us a substantial cost advantage over other suppliers. We are confident we can demonstrate that our plants produce separative work units (SWU) at substantially lower costs than in Western Europe and the USA, especially by comparison to the gaseous diffusion method.

The centrifuge cascade contains about ten consecutive stages (but not as many as 1,000 stages, as might be the case for a diffusion plant), and each cascade has a large number of connected gaseous centrifuges. Each plant is

© NUEXCO 1989

built under a plan so that it will be near to the ideal cascade—i.e., almost without any losses of separative work—and it also makes the cost lower. Thus, the low specific energy consumption of our centrifuge units (three to five percent of amounts consumed by diffusion cascades) and the efficiencies associated with more flexible sizing, give our centrifuge facilities a major advantage over competitors such as DOE and Eurodif. Finally, the low failure rate and an automated operating system associated with centrifuge technology give TSE another cost advantage over diffusion suppliers.

Regarding our cost advantage relative to other centrifuge suppliers, it is well known that in our country the electricity cost and wages are lower than in developed Western countries. It certainly reduces the production costs in comparison with the costs in the West. A continual research and development effort also contributes to cost reductions. Thus, TSE is able to offer highly competitive pricing, as a direct result of being the low-cost competitor in the market.

—·—·—

NUEXCO: Given your competitive advantage as the lowest-cost supplier of SWU and enriched product, what market penetration do you plan to achieve? And what tactics do you intend to use?

MR. NIKIPELOV: We estimate that annual SWU demand of market economy countries will grow to about 38 million SWU by 1995. Our current annual sales of about two million SWU fill only about five percent of that demand. We have sufficient centrifuge capacity to supply more than 25 percent (ten million SWU per year), but only about half that amount is presently reserved for export. Sales of five million SWU per annum would give us about one-eighth of the market.

Our country desperately needs foreign exchange to enable us to play a role in the world economy, so our strategy is calculated to obtain maximum hard currency. Our production capacity is flexible and market demand is relatively inflexible, so some prospective customers may fear that we would engage in predatory pricing (or "dumping") in order to maximize market share. Those fears ignore several points:

- A dumping strategy is based on raising prices after the key competitors have been driven out of the market. Our economy needs foreign exchange *now*, and we would not be willing to defer profits long enough to use such a strategy.
- Furthermore, other suppliers would be very hard to drive out of the market. Their capital investments have already been made, and they would be highly unlikely to withdraw as a result of a price war. Strategic factors would also keep competitors in the market, so any dumping campaign would be longer and more costly than we could accept.
- Finally, dumping is prohibited by the General Agreement on Tariffs and Trade (GATT), an international trade treaty to which the Soviet Union adheres.

Thus, we intend to continue competing aggressively to sell all of our available output, but without sacrificing favorable prices. We also intend to become more open to presenting information about the quality of Soviet products and services.

—·—·—

NUEXCO: Does that mean you will be limited to long-term contracts?

MR. NIKIPELOV: No. Originally TSE made only long-term SWU contracts, with prices pegged to the DOE price. Over the past several years, as the SWU market has changed, so have we. We still prefer long-term contracts, but TSE has also been offering spot contracts and short-term contracts (one to three years in length).

Since 1988, we have also been offering enriched uranium made from Soviet feed material, and several transactions have already been executed. We are prepared for any or all of our expected four to five million SWU annual sales to be contained in Soviet enriched uranium.

—·—·—

NUEXCO: Mr. Nikipelov, you mentioned your country's need for hard currency to participate in the world economy. How are the funds generated by TSE used? And are they controlled by MAEI, by TSE, or by some other part of the Soviet government?

MR. NIKIPELOV: First, these funds are not going to be used for military purposes of any kind. Second, they will not be used for the development of nuclear power stations of any kind. These funds can be used for improving reactor safety, but that is a concern of all nations, not just of the nations in which power reactors are located.

© NUEXCO 1989

The hard currency generated by TSE will be used for three main purposes:

- the purchase of technology and equipment for production, processing, and packaging of milk and milk products,
- the purchase of durable consumer goods (not foodstuffs or grain), and equipment for the manufacture of consumer goods,
- the purchase of equipment and technology for the USSR manufacture of *personal* computers (not for military use).

Part of the funds will be used to cover the Soviet Union's participation in related joint ventures for USSR production. And other purchases will be made through barter transactions, so the buyers of TSE products and services will be able to see the purpose to which the currency is applied. Depending on the volume of hard currency generated by TSE, part of the foreign exchange earnings may be used for the purchase of technology and equipment for the reduction and processing of industrial pollutants and waste products.

—·—·—

NUEXCO: What other products and services can TSE sell?

MR. NIKIPELOV: We are engaged in many other activities, such as sales of:

- natural uranium and other nuclear fuel components,
- equipment using radioisotopes, plus the radioisotopes themselves (Co–60, Cs–137, Pu–238, Np–237) and products using tritium,
- stable isotopes,
- instruments and measuring equipment,
- accelerators, lasers, and associated equipment,
- beryllium and beryllium ceramics,
- zirconium,
- lithium,
- scandium,
- rare earths,
- molybdenum,
- nitrates and phosphates for fertilizers, and
- emeralds and colored stones.

I hope we will be able to cover those other areas in depth at some time in the near future.

We will also aim to establish joint ventures with foreign manufacturers, preferably based on our technology and located in the USSR. We will strive to increase trade volume in general, as trade is a motive force for progress, and a stimulus for peace.

—·—·—

NUEXCO: In conclusion, is there any message you would like NUEXCO's readers to pass on to their colleagues?

MR. NIKIPELOV: Yes. Substantial increases in trade between my country and each of your readers are highly beneficial in promoting peace, and that is even more important than the very real economic benefit to be gained. However, one considerable obstacle to this process is the comparatively low demand in Western countries for products of the Soviet Union. All of TSE's products and services are not yet well known to Western buyers, so that presents another obstacle to trade.

Those factors are especially acute relative to the US market, but we believe TSE's sales into the US market have already begun to stimulate improvements in bilateral trade relations. They also have the potential in the future for expanding those relations further. Considering the possible benefits to world peace, we look forward eagerly to helping to strengthen existing trade bonds between our country and those of your readers, especially the USA. ■

© NUEXCO 1989

THE EURATOM SUPPLY AGENCY

With the coming liberalization of trade and industry within the European Community (EC) and a more centrally-coordinated EC external trade policy, it is timely to ask if in the 1990s there will be any significant changes in the commercial relations between the EC and non-EC companies trading in nuclear fuel. The key vehicle for implementing any change of policy would probably be the European Atomic Energy Community (EURATOM) Supply Agency in Brussels, which is charged under the EURATOM Treaty with overseeing the equitable supply of nuclear fuel to and among EC companies. The EURATOM Supply Agency (the Agency) is a signatory to almost all EC-company contracts for transactions that occur on the territory of the Community, which includes Belgium, Denmark, France, the Federal Republic of Germany (FRG), Great Britain, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

During the 1980s, the Supply Agency has rarely tried to influence the commercial decisions of EC member companies. The nuclear fuel industry has largely perceived the Agency as an administrative office that registers contracts and maintains relations with some outside governments, particularly Australia, Canada, and the USA. However, in 1988 the Agency began to have a more direct commercial impact when it reviewed the practice—previously conducted routinely by the EURATOM Safeguards Directorate in Luxembourg at the request of EC-member companies—of swapping safeguards obligations on equivalent quantities of uranium at different locations (flag swapping).

The Agency's actions inhibiting flag swaps, as well as a related *de facto* policy restricting material swaps of Southern African uranium, caused it to be viewed as obstructive by some EC companies. Some even described the Supply Agency's policies as anti-European in the sense that such swaps promote the fungibility of uranium within the EC's internal market.

During 1989 the discussion about flag swaps and swaps involving South African and Namibian uranium has subsided, and a far-reaching discussion has arisen about EC trade policy in general. As the European Commission in Brussels gains greater authority and the relative authority of the member states diminishes, seemingly an irreversible process, the Supply Agency's influence over the contracting practices of EC companies could grow.

Influence of Politics

The European Commission is the executive body of the EC, composed of seventeen commissioners appointed by the member states, two each from the five largest member states and one each from the seven remaining members. Each Commissioner has the responsibility for a separate portfolio or set of portfolios, such as Energy or Agriculture. Reporting directly to the Commissioners are 22 Director Generals, the most senior civil servants in the EC bureaucracy. Most of the director-generalships in the EC are comparable to ministries in a member state government, and in that sense the EURATOM Supply Agency is unique: with a staff of only twenty-five persons, it is the smallest administrative unit in the EC bureaucracy to have a director-generalship.

The Director General of the Supply Agency is Michael Goppel of the FRG, and he reports directly to the Commissioner responsible for Energy, Antonio Cardoso e Cunha of Portugal. Both Cardoso and Goppel assumed their positions January 1, 1989. The senior administrator of the Supply Agency under Goppel is Jean-Claude Blanquart, from France. An Advisory Committee, comprising officials from EC companies, assists the Supply Agency on a consultative basis.

As the Commission is a political body responsive to the European Parliament, and the Supply Agency is closely

© NUEXCO 1989

connected to the Commission, the Agency's rules may be heavily influenced by European politics at any point in time. For instance, the Agency attributes the 1988 *de facto* policy restricting swaps to directives from the Commission. The Commissioner for Energy at that time, Nicolas Mosar of Luxembourg, was a socialist with little enthusiasm for the nuclear sector. He apparently faced a barrage of questions from members of the European Parliament after the publication in the German news magazine *Der Spiegel* of allegations that the Supply Agency had acted wrongly in consenting to flag swaps and allowing free trade in South African uranium. After several meetings with Mosar, the Agency succumbed to the political pressure and changed its guidelines for swaps and for contract review in general. (The letters shown at the end of this article demonstrate the Commission's current position on these and related issues.)

At the moment, the political balance on the Commission tends to favor the nuclear fuel industry. With the appointment of Cardoso and Goppel and the passing of the *Der Spiegel* affair, the Supply Agency has resumed its customary attitude of *laissez faire* with regard to the commercial practices of EC companies. However, the recent experience of political interference suggests that market participants should be aware of changes in the political balance on the Commission, and of changes in the EC's attitudes towards external supplier nations.

Legal Limitations

Under the EURATOM Treaty, which was signed in Rome on March 25, 1957 by the member states of the organization then known as the European Community for Coal and Steel, the Supply Agency has broad legal powers, including:

- the exclusive right, with few exceptions, to conclude contracts involving natural and enriched uranium where deliveries ultimately occur on EC territory;
- the option to purchase material in place of a potential contractual party, which option may be used to enforce the principle of "equal access" of all EC companies to limited supplies;
- the legal ownership (on behalf of the Community) of all special fissile materials—including uranium in most forms other than ore and ore concentrates—produced or imported by EC companies.

Customarily, the Supply Agency's exclusive right to conclude contracts is maintained through provision of a clause in EC-based contracts, after signature of the main parties to the agreement, which reads, "This Agreement is concluded with the concurrence of the EURATOM Supply Agency," and is followed by the signature of an Agency official. The Agency's involvement in the contract normally does not extend past providing such concurrence, and the Agency does not physically monitor uranium stocks. Under the EURATOM Treaty, physical inspection and the accounting of safeguards obligations are the responsibility of the EURATOM Safeguards Directorate. Facilities on EC territory that store and process uranium are required to provide a regular material accounting to the Safeguards Directorate, and EURATOM inspectors check nuclear fuel shipments in and out of the EC. Materials used for national defense purposes in France and the UK are exempt from the regulation.

Since the emergence of the commercial uranium market in the 1970s, the Supply Agency is not known to have exercised its authority to buy and sell on its own initiative, or to rearrange supplies among EC member companies to any notable degree. An unusual situation, however, exists in the relationship between EURATOM and the US Department of Energy (DOE). The Supply Agency is the contract holder and administrator of all EC-company business with DOE, which means that notices to and from EC companies pass through Brussels en route to and from DOE. The Agency has intervened to influence the disposition of some quantities of DOE-origin high-enriched uranium (HEU), as HEU is relatively scarce for EC research programs. However, it is not clear, even in those cases, that the Agency refused to endorse a fully executed contract or exercised its option to purchase in a contemplated sale from an EC company to a non-EC company.

Under the Treaty, if an EC company disagrees with a decision made by the Supply Agency it cannot resort to proceedings in a court of law, but may appeal directly to the Commission, and the Commission must respond within one month of the appeal. While no cases of such appeal are publicly known, an informal appeal was made recently in a case involving a material swap contract that the Agency was slow to endorse. In that case, a major EC company appealed through its national government to a member of the European Commission who caused the Agency to expedite conclusion of the contract.

© NUEXCO 1989

There are other implicit limitations on the Supply Agency, including the possibility that EC companies might disregard EURATOM's authority. The Agency does not have powers of enforcement. Thus, if the Agency were to discover that a transaction occurred without its concurrence, the Agency's only clear recourse, aside from legal action in the European Court, would be to withhold consent to a future transaction involving the material in question. Because of this limitation, the Supply Agency may make a special effort not to antagonize EC companies or interfere in their affairs. Certain member states, particularly those that might not clearly benefit from the Supply Agency's powers, would be likely to resist any heavy-handedness on its part.

Safeguards Codes

One of the Agency's activities is the maintenance of relations with foreign supplier governments with whom the EC has bilateral safeguards agreements, the principal ones being Australia, Canada, and the USA. The three major EURATOM bilaterals allow for material to be delivered from the source countries to the EC and retransferred freely within the EC, except for in Spain. Spain has its own bilateral agreement with the USA, which the US government is reluctant to renegotiate for the benefit of EURATOM; negotiations are underway for Canada and Australia to accept Spain under the EURATOM bilaterals, but there has been some delay due to Spain's failure to sign the Nuclear non-Proliferation Treaty.

Under the three EURATOM bilaterals, transfers out of the EC of material bearing Australian, Canadian, or US safeguards obligations generally require the prior consent of the relevant governments, which the Supply Agency obtains through established inter-government channels. Reprocessing of fuel also may require prior consent, and has been a topic of discussion between EURATOM and the three governments, who in the past have shown some hesitation in consenting to the separation of plutonium and its use in commercial fuel assemblies.

The EURATOM Safeguards Directorate and the Supply Agency employ a letter-code system to identify the safeguards obligations associated with nuclear fuel located on the territory of the EC. The principal codes are as follows:

Code	Nature of Safeguards Obligation
S	EURATOM-Australia bilateral
C	EURATOM-Canada bilateral
A	EURATOM-USA bilateral
D	EURATOM-USA/EURATOM-Canada bilaterals
T	EURATOM-USA/EURATOM-Australia bilaterals
P	Peaceful uses only
N	No obligations external to the EC

Most of the nuclear fuel facilities in the EC record material on their books on the basis of safeguards codes as opposed to origin, although during the past two years the Supply Agency, and other entities in some cases, have requested statements of origin in addition to safeguards code. In the USA the reverse is generally true, as origins are recorded on NRC forms while safeguards obligations *per se* are not. One of the issues surrounding the question of swaps within the EC was whether in the conduct of a flag swap the "origin" of material followed the "flag" or safeguards code, particularly when material at issue was destined for the USA. Of course, because uranium has identical characteristics regardless of origin, and nuclear fuel facilities keep running stockpiles, the mine origin of uranium cannot actually be traced once it enters the conversion process. The Supply Agency considers uranium that has been substantially transformed within the EC to be of European (or, for example French or British) origin.

Under informal agreements between EURATOM and the Republic of South Africa and EURATOM and the USSR, EURATOM may respect those suppliers' requests for a guarantee by certain end-users of exclusively peaceful use. Material so obligated receives the code P upon entry into the EC. All other material delivered into the EC, where no arrangement exists between EURATOM and the supplier state, receives the code N. Material coded N is considered the most desirable to EC companies because it is subject only to the internal EURATOM safeguards and the agreements between EURATOM and the IAEA.

© NUEXCO 1989

Diversity of Supplies

The Supply Agency publishes an Annual Report containing statistics on the number and type of contracts concluded by the Agency and other information about uranium deliveries to and from the EC in the previous calender year. (See page 37 for a summary of some Agency statistics.) The lead paragraph of the latest Supply Agency's Annual Report reads:

> The Supply Agency is able to report that in 1988 supplies of natural uranium and enrichment services to users in the Community were maintained satisfactorily, as were supplies of fuel cycle services. In the natural uranium sector most transactions were spot or exchange operations. Particularly noticeable was the lack of long-term activity and the much lower tonnage purchased than in previous years. This appears to be the consequence of excess inventories held by utilities, which in turn has led to weakness in demand and a falling price in the spot market.

In keeping with the Agency's policy of confidentiality, the Report does not provide statistics on the origins of material or the quantities delivered to particular member states or companies.

In its oversight capacity, however, the Supply Agency monitors the quantities of material imported from various supplier nations. Furthermore, it is clear that persons within the Agency have particular views as to the proper balance of supply sources for the EC, although no official target limits have been published. For whatever reasons—political, strategic or economic—the Agency may not wish to see the Community supplied with "too much" uranium from a particular source.

One representative of the Agency remarked, after passage of the Anti-Apartheid Act in the USA, that the law must not lead to the EC becoming a "dumping ground" of material of origins not acceptable in the USA. Such a remark is interesting from a purely business perspective, as in theory the Agency should be satisfied at the prospect of additional supplies available to European consumers, as long as the EC has not invoked similar sanctions against South Africa.

At the moment the nuclear fuel market is undergoing its second phase of globalization, with the Centrally Planned Economy (CPE) countries rapidly expanding their place as suppliers worldwide. Much of the CPE uranium has been and will be marketed in Europe. At the same time, Namibian uranium, which has been politically unattractive to European utilities for at least the past two years, could become desirable after that country's independence. How the Supply Agency and the European Commission respond to these and other developments will be interesting to observe.

On the one hand, the EC may be subjected to lobbying by such traditional trading partners as the USA and Canada to limit trade with some of the newer supplier countries. On the other hand, Western Europeans may wish to have fuller trade relations with Eastern Europe, in particular, as well as Asia and Africa. As the EC continues to unify and define its own best interests, these possibilities become more intriguing. ■

Jim Lightner
NUEXCO Trading Corporation

* * *

On the following page are translations of two letters from early 1989 addressed by members of the European Parliament to the European Commission concerning the issues of nuclear fuel safeguards obligations, flag swaps, and origin. Following the letters are the responses of Mr. Cardoso e Cunha, the Commissioner who oversees the Supply Agency. These letters provide some insight into the political environment in which the Supply Agency, by extension, functions. The letters and responses are extracts from the Official Journal of the European Communities, number C270/16 of October 23, 1989.

© NUEXCO 1989

WRITTEN QUESTION No. 2025/88
by Mrs. Barbara Simons (S)
to the Commission of the European Communities
(25 January 1989)
(89/C 270/28)

Subject: Changes in the declaration of origin of uranium

The Commission states in answer to my Written Question No. 2918/87* that it agrees with the conclusions of Mr. Schmid's report, which was submitted to Parliament in July 1988.

Would the Commission also give precise answers to the following questions:

1. Does the Commission therefore agree that there is a need to alter the legal basis for the practice of flag swaps?
2. Is the Commission taking or contemplating measures to achieve this end and what are they?
3. How will the Commission ensure that political embargos against South Africa are not circumvented by flag swaps in the future?

* OJ No C 114, 8. 5. 89, p.14.

Answer given by Mr. Cardoso e Cunha
on behalf of the Commission
(20 March 1989)

In its presentation to the European Parliament on 26 October 1988**, the Commission confirmed the existence of legal bases for flag swaps at both internal and international levels, even in the absence of specific provisions in the regulations implementing Chapter VII of the Euratom Treaty***.

Moreover, the Commission confirms that it had begun to examine in detail the suitability of explaining in detail the abovementioned regulation with regard to flag swaps as recommended by the Parliament in its resolution on the results obtained by the Committee of Enquiry on the handling and transport of nuclear materials.

At the current stage of the proceedings, the Commission has not identified any decisive reasons, at either the operational or legal-certainty level, for taking such a step.

As stated by the Commission before the Committee of Enquiry on 26 April 1988 flag swaps only affect safeguard systems that apply to the materials at issue, without any repercussions on their origin, since this is a concept that is completely beyond the bounds of inspection. By their very nature flag swaps could therefore not be used to oppose political embargo decisions which might effect materials originating in South Africa.

** Debates of the European Parliament No. 2-370 (October 1988).
***OJ No L363, 31. 12. 76, p.1.

WRITTEN QUESTION No. 2076/88
by Mr. Llewellyn Smith (S)
to the Commission of the European Communities
(27 January 1989)
(89/C 270/32)

Subject: Energy

Pursuant to the EC reply to EP Question 2934/87* on 21 September 1988 to myself, will the Commission (a) explain why the Euratom safeguards directorate is not required to know the origin of safeguarded materials, (b) how does this non-requirement affect the conduct of bilateral safeguards on uranium imported to the Community from Canada, Australia, and the USA, and (c) will the Commission take steps to initiate amendments for the Euratom Treaty, Chapter 7, on safeguards to close the loophole that does not require knowledge of origin of civil nuclear materials?

* OJ No. C95, 17. 4. 89. p.5.

Answer given by Mr. Cardoso e Cunha
on behalf of the Commission
(17 March 1989)

The Commission confirms its previous statements to the European Parliament. Origin is a notion alien to safeguards: neither Chapter VII of the Euratom Treaty nor its implementing Regulation (EEC) No 3227/76 requires the Community safeguards system to verify it. The same applies, at world level, to IAEA safeguards.

This situation does not affect the proper implementation by Euratom of the international agreements concluded with Australia, Canada and the USA. The Commission maintains, throughout the Community, the tracking of nuclear material subject to these agreements. This material, however, even at the moment of its transfer to the Community, is not necessarily the same as that which physically originated in the third countries in question. This occurs because of the accepted fungibility of nuclear material, and origin cannot thus be relied upon or used in any way to determine, let alone to verify, the material actually falling within the scope of Community agreements.

The Commission does not intend to take any steps with a view to introducing origin into the Euratom safeguards system. Origin is irrelevant to the basic task entrusted to the Community by Article 2 e) of the Euratom Treaty, to make certain that nuclear material is not diverted to purposes other than those for which it is intended.

© NUEXCO 1989

NUEXCO

REPUBLIC OF SOUTH AFRICA
Third Quarter 1989 Production

Third quarter 1989 South African uranium production rose 6.1% from the second quarter, but was 18% lower than 1988's third quarter results. Compared to the first three quarters in 1988, production is down over 25% this year. If this trend continues for the fourth quarter, total 1989 production will be well under eight million pounds.

Most producers have recently been burdened with dramatically increased wages and reduced recovery grades. Hartbeestfontein reported a decline in profits in the third quarter, even though mining greater quantities of ore in an attempt to offset lower recovery grades. In contrast, Anglo-American showed higher profits for this quarter, while contending with wage hikes and disappointing gold prices.

Although no operations have ceased uranium production this year, additional closures among the seven remaining operations may be expected in the near future unless the South African uranium industry can obtain some relief from current political and economic pressures. ■

Table 1
REPUBLIC OF SOUTH AFRICA
RECENT URANIUM PRODUCTION[1]
(Thousands of Pounds U_3O_8)

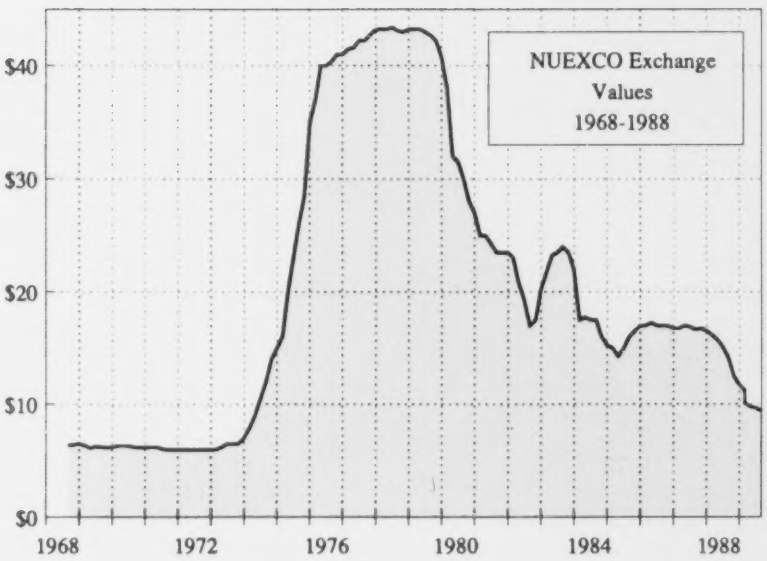
Operation	Fourth Quarter 1988	First Quarter 1989	Second Quarter 1989	Third Quarter 1989	Percent Change[2]
Buffelsfontein	238	231	216	221	-2.3
ERGO[3]	104	109	105	80	-23.8
Freegold[4]	282	256	224	262	+17.0
Harmony	85	0	0	0	0.0
Hartebeestfontein	200	199	182	183	+0.5
Stilfontein (Chemwes)	176	0	0	0	0.0
Vaal Reefs	1,067	962	941	1,011	+7.4
Western Areas	112	117	112	131	+17.0
TOTAL[5]	**2,264**	**1,874**	**1,780**	**1,888**	**+6.1**

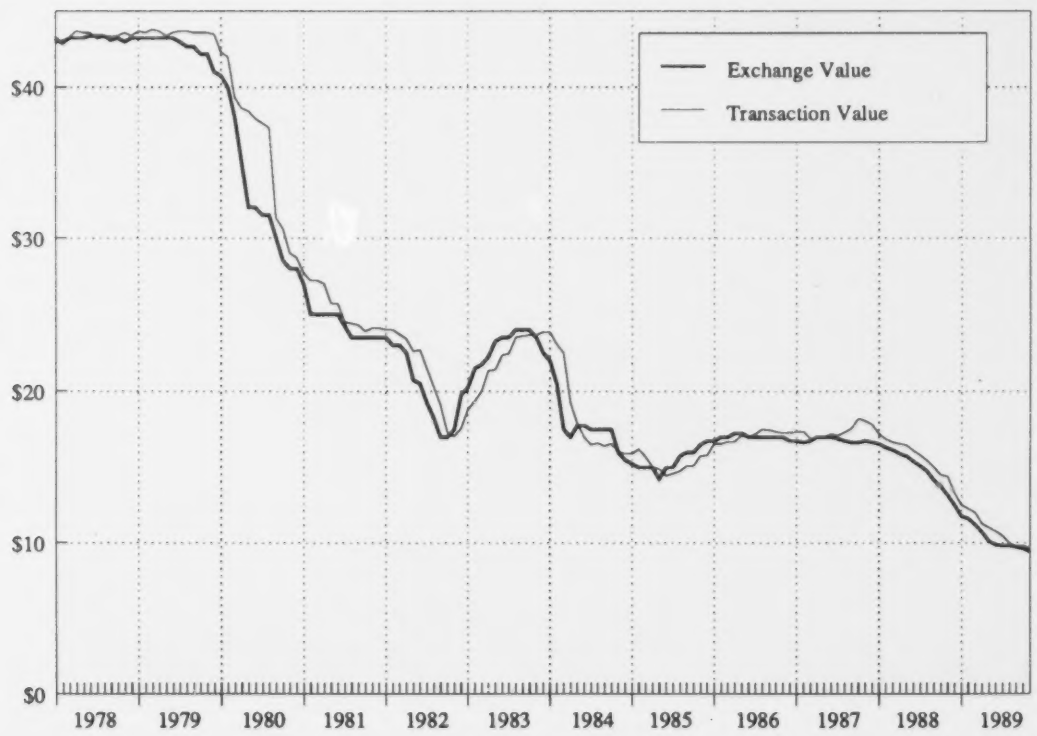
[1]Excludes Palabora Mining Company, which is not a member of the Chamber of Mines.
[2]Change in percent from the second quarter of 1989.
[3]ERGO = East Rand Gold and Uranium Company Ltd.
[4]Formerly Free State Joint Metallurgical Scheme.
[5]Columns may not add up due to rounding.

© NUEXCO 1989

NUEXCO Historical Exchange and Transaction Values

(In US Dollars/Pound U_3O_8)





© NUEXCO 1989

NUEXCO

HISTORICAL MARKET DATA

HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated ($US/lb U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20	10.70	10.10	9.85	9.80	9.80	9.70	9.60	**9.40**		

HISTORICAL US PREMIUM (Relative to the Exchange Value)

Determined as of the last day of the month indicated ($US/lb U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	**None**	

HISTORICAL UF_6 VALUES

Determined as of the last day of the month indicated ($US/kg U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	44.75	44.00	42.75	41.00	40.75	39.00	37.50	35.50
1989	34.75	34.00	33.00	30.50	30.25	30.25	30.00	29.75	29.75	**28.25**		

© NUEXCO 1989

HISTORICAL US UF_6 PREMIUM (Relative to the UF_6 Value)

Determined as of the last day of the month indicated ($US/kg U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	1.00	0.00	0.00	0.00	0.00	0.00	**None**	

HISTORICAL TRANSACTION VALUES

Determined as of the last day of the month indicated ($US/lb U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.30	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.05	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989	12.25	12.00	11.25	11.00	10.80	10.45	9.95	9.80	9.80	**9.65**		

HISTORICAL CONVERSION VALUES

Determined as of the last day of the month indicated ($US/lb U as UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	1.80	1.80	1.85	1.95	1.95	1.95	1.95	1.95
1989	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	**1.80**		

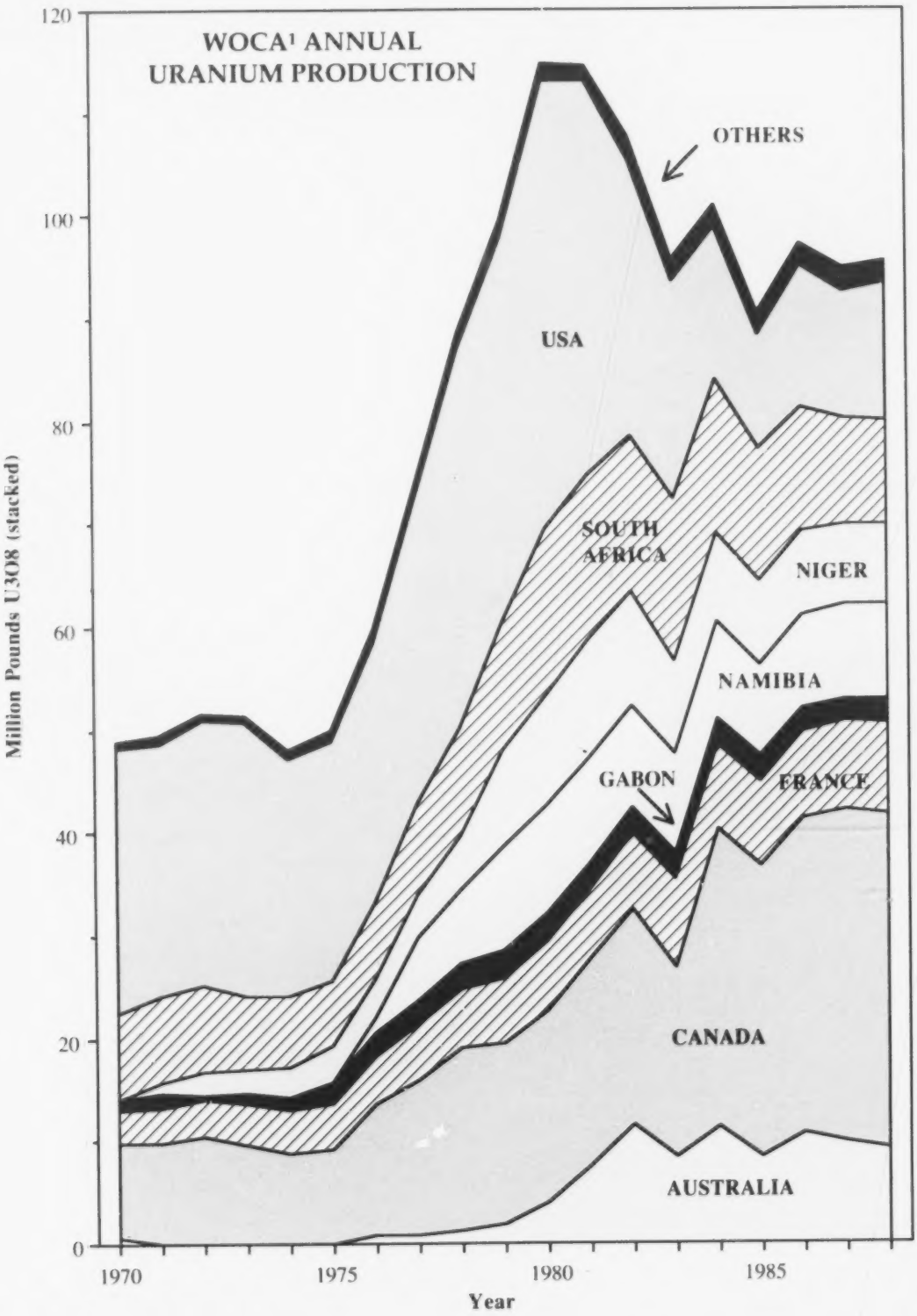
HISTORICAL SWU VALUES (at 0.30 Percent Tails Assay)

Determined as of the last day of the month indicated ($US per SWU)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	68	68	68	65	65	65	65	65
1989	65	67	67	67	66	66	66	65	63	**59**		

NUEXCO

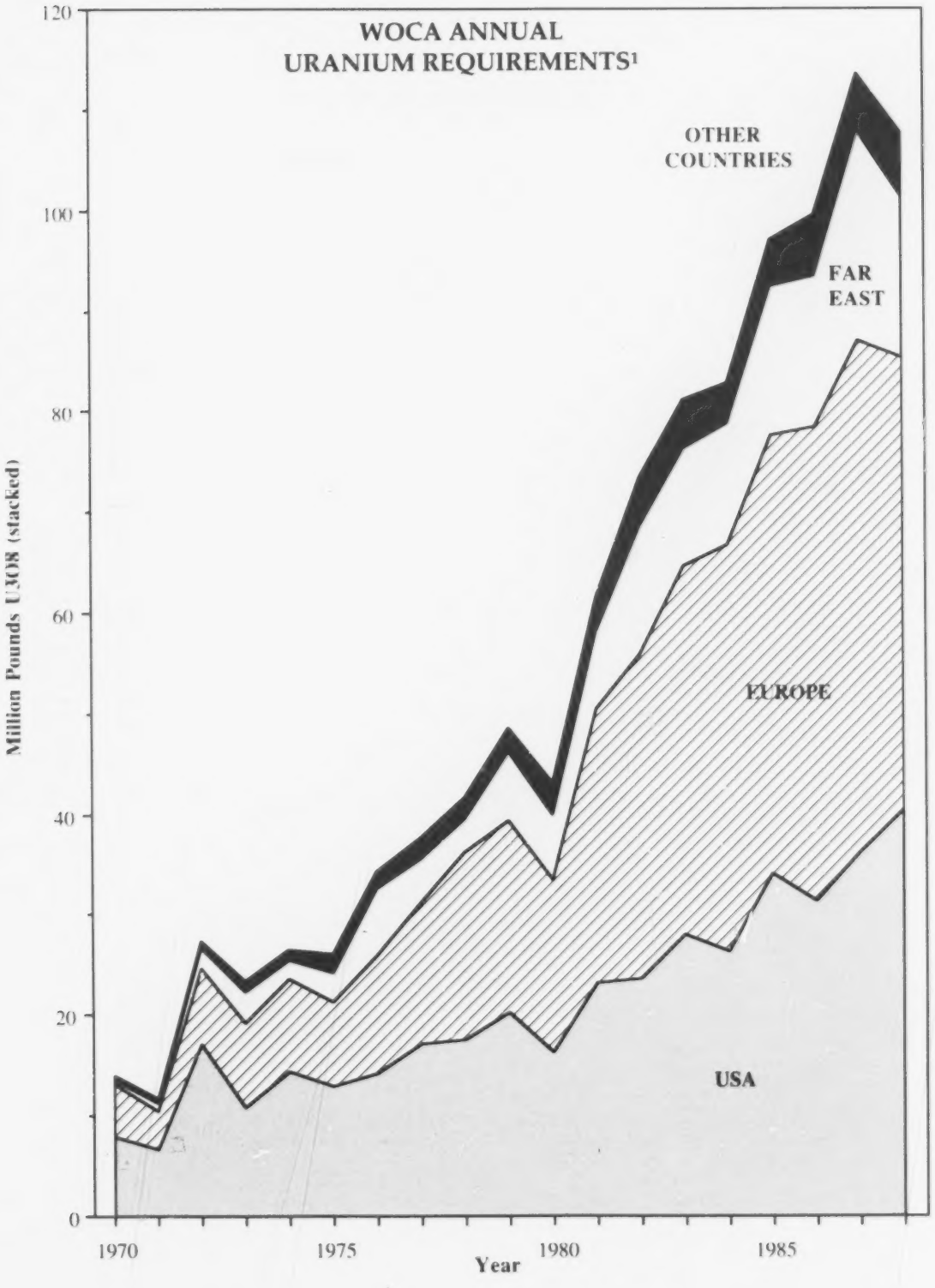
HISTORICAL MARKET DATA



1 WOCA = World Outside of Centrally-Planned Economic Areas.

2 World production in 1988 totalled 96.8 million pounds (Australia—9.3; Canada—32.3; France—8.9; Gabon—2.4; Namibia—9.2; Niger—7.8; South Africa—9.9, USA—13.5; Other—3.5).

© NUEXCO 1989



[1] Calculated by NUEXCO based on actual plant completion dates and operating performance, and NUEXCO's estimate of enriching tails assays.

© NUEXCO 1989

NUEXCO

HISTORICAL MARKET DATA

VOLUME AND PRICE OF URANIUM DELIVERIES TO THE EUROPEAN COMMUNITY[1]
(Compiled from data published by the Euratom Supply Agency)

Year	Volume of Deliveries to the EC[2] (in MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts[3,4]		Spot Contracts[3,4]	
			Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8	Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75
1987	14,000	17.0	ECU 28.25	$32.50	ECU 15.00	$17.25
1988	12,500	4.5	ECU 26.92	$31.82	ECU 13.65R	$16.13R

R = Revised

[1]The twelve European Community member nations are Belgium, Denmark, France, the Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.
[2]The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.
[3]For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar.
[4]Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

© NUEXCO 1989

US URANIUM MARKETING ACTIVITIES STATISTICS
(Compiled from data published by the US Energy Information Administration) [1]

Year	Total Production (million pounds U_3O_8)	Deliveries to Domestic Utilities From US Suppliers[2] (million pounds U_3O_8)	Average Price of Delivered Uranium[2] ($/lb. U_3O_8)	Quantity of Uranium Imported[3] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	27.6	16.10	3.6	n/a	1.2
1977	29.9	27.8	19.75	5.6	n/a	4.0
1978	37.0	31.6	21.60	5.2	n/a	6.8
1979	37.5	33.0	$23.85	3.0	n/a	6.2
1980	43.7	35.0	$28.15	3.6	$43.10	5.8
1981	38.5	32.6	$34.65	6.6	$32.90	4.4
1982	26.9	23.5	$38.37	17.1	$25.19	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6
1987	13.0	20.8	$27.37	14.8	$19.14	1.0
1988	13.1	17.6	$25.65	15.8	$19.03	3.3

[1] Sources: 1976-1983: US Department of Energy/Energy Information Administration, *Survey of United States Marketing Activity*
1984-1988: Energy Information Administration, *Uranium Industry Annual*

[2] Data for 1976-1981 includes both domestic utilities and agents

[3] Includes imports by domestic utilities and domestic suppliers

© NUEXCO 1989

NUEXCO

GOVERNMENT STATISTICS

AUSTRALIA

		Consumer Price Index[1] (1980/1981 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups[2] (1984/1985 = 100)	Average Weekly Earnings — Adult Males — Australia (Australian dollars)[6]	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates[3] (June 1985=100)
1980	Avg.	95.8	83.1	—	140.8[5]
1981	Avg.	105.0	85.9	—	154.1[5]
1982	Avg.	116.7	89.0	—	174.9[5]
1983	Avg.	128.5	96.9	—	181.9[5]
1984	Avg.	133.6	98.0	—	194.4[5]
1985	Avg.	142.6	107.3	—	103.7
1986	Avg.	155.5	101.5	—	106.1
1987	Avg.	168.7	108.9	465.88	112.3
1988	Avg.	180.9	111.8	496.90	115.2
Jan	1989	—	110.6	—	122.2R
Feb	1989	—	111.2	521.90	122.2R
Mar	1989	188.0	114.9	—	123.1R
Apr	1989	—	117.5	—	123.2R
May	1989	—	118.6	531.50P	123.6R
June	1989	—	119.9	—	123.6
July	1989	—	120.1	—	123.6

P = Preliminary **R** = Revised since last month

[1]Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1980 to June 1981 =100.0). Figures shown at end of quarter represent quarterly average.
[2]Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0).
[3]Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.
[4]Monthly data for the period 1967 to 1986 appear in Report 233.
[5]Base: June 1976 = 100.
[6]Australian Bureau of Statistics, Canberra: "Average Weekly Earnings, States & Australia" (Catalogue No. 6302.0).

© NUEXCO 1989

CANADA

		Industrial Products Price Index: All Commodities[1] (1981 = 100)	Consumer Price Index: All Items (1981 = 100)	Wage-earner Data: Average Hourly Earnings (C$)[2] Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells[3] (SIC 051-099)	Metal Rolling, Casting and Extruding (SIC 298)	Chemicals and Chemical Products Industries (SIC 372-379)
1980	Avg.	90.7	88.9	—	—	—	—	—
1981	Avg.	100.0	100.0	—	—	—	—	—
1982	Avg.	106.7	110.8	—	—	—	—	—
1983	Avg.	110.4	117.2	17.22	—	14.18	10.67	11.10
1984	Avg.	115.4	122.3	17.89	—	14.97	11.11	11.68
1985	Avg.	118.6	127.2	18.53	16.48	15.56	11.85	12.12
1986	Avg.	119.6	132.4	19.38	16.70	15.76	12.28	12.58
1987	Avg.	122.7	138.2	20.12	17.15	16.11	12.58	13.20
1988	Avg.	128.1	143.8	20.91	18.51	16.95	13.17	13.77
Jan	1989	130.7	146.8	21.22	19.45	18.14	13.75	13.82
Feb	1989	130.8R	147.8	22.05	19.51	18.26	13.79	13.89
Mar	1989	131.3R	148.5	21.90	19.65	18.35	13.62	14.10
Apr	1989	131.3R	149.0	22.37	19.80	18.40	13.57	14.16
May	1989	131.4R	150.5	21.89	20.02	18.17	13.76	14.27
June	1989	131.4R	151.3	21.89R	20.02R	18.17R	13.76R	13.22R
July	1989	131.3R	152.3	21.67	19.60	17.96	13.57	12.98
Aug	1989	131.2R	152.4	20.97P	19.50P	18.08P	13.47P	13.15P
Sept	1989	130.9	152.6	—	—	—	—	—

P = Preliminary R = Revised since last month

[1]Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1986 is found in Report 233.
[2]Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1986 is found in Report 233.
[3]Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)."

© NUEXCO 1989

NUEXCO

GOVERNMENT STATISTICS

REPUBLIC OF SOUTH AFRICA

		Average Declared Working Costs per Metric Ton of Gold Ore Milled (Rand)[1]	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled (March 1982 = 100)[2]	Consumer Price Index[3] (1985 = 100)	Production Price Index All Groups[4] (1980 = 100)	Total Employment in Mining and Quarrying[5]	Total Salaries and Wages in Mining and Quarrying (1,000 Rand)[5]
1980	Avg.	35.53	—	51.9	100.0	709,042	2,237,689
1981	Avg.	41.89	—	59.8	113.6	722,918	2,756,928
1982	Avg.	47.25	104.2	68.6	129.4	702,041	3,181,584
1983	Avg.	51.88	115.0	77.1	143.1	700,901	3,563,282
1984	Avg.	58.95	130.3	86.0	155.1	711,511	4,134,390
1985	Avg.	68.76	151.6	100.0	181.2	724,587	4,778,612
1986	Avg.	80.22	177.9	118.6	216.6	756,637	5,767,950
1987	Avg.	95.01	223.1	137.7	246.8	751,864	6,911,395
1988	Avg.	106.69	241.1	155.4	279.3	705,355	7,774,054
Jan	1989	—	—	166.8	299.8	714,593	704,320
Feb	1989	—	—	168.2	305.4	696,329	669,983
Mar	1989	112.29	262.8	170.9	310.0	702,746	695,843
Apr	1989	—	—	173.1	315.0	658,677	634,344
May	1989	—	—	175.9	319.6	—	—
June	1989	113.76	267.0	177.7	320.9	—	—
July	1989	—	—	179.3	324.0	—	—
Aug	1989	—	—	181.8	329.2	—	—
Sept	1989	—	—	183.4	—	—	—

P = Preliminary R = Revised since last month

[1]Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in Report 236.
[2]Page 16 of Report 178 contains description and calculation of index, and page 24 of Report 178 lists figures for 1982.
[3]Central Statistical Service, Pretoria: All income groups-weighted average, Historical Data by month appears in Report 236.
[4]Central Statistical Service, Pretoria: All commodities for consumption in South Africa.
[5]Central Statistical Service, Pretoria: Historical Data by month appears in Report 236.

© NUEXCO 1989

UNITED STATES

		Producer Price Index[1]		Consumer Price	GNP Implicit Price	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[4]			
		Industrial Commodities (1982 = 100)	All Commodities (1982 = 100)	Index[2] (1982-1984 = 100)	Deflator[3] (1982 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	85.7	10.26	10.63	8.30	6.94
1981	Avg.	97.4	98.0	90.9	94.0	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	100.0	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	103.9	12.58	13.43	10.58	8.67
1984	Avg.	103.3	103.7	103.9	107.7	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	110.9	13.38	13.74	11.56	9.46
1986	Avg.	100.0	100.2	109.6	113.9	12.46	13.48	11.98	9.65
1987	Avg.	102.6	102.8	113.6	117.7	12.52	12.98	12.37	9.88
1988	Avg.	106.3	106.9	118.3	121.7	13.09	13.22	12.67	10.13
Jan	1989	109.4	110.5R	121.1	—	13.80	13.49	12.85	10.27
Feb	1989	110.1	110.8	121.6	—	13.66	13.48	12.88	10.26
Mar	1989	110.5	111.5	122.3	125.4	13.71	13.51	12.91	10.30
Apr	1989	111.8	112.3	123.1	—	13.68	13.65	12.92	10.31
May	1989	112.1R	113.2R	123.8	—	13.60	13.57	12.98	10.33
June	1989	112.3	112.8	124.1	126.0	13.62	13.66	12.98	10.37
July	1989	112.2	112.7	124.4	—	13.70R	13.75P	13.12R	10.41R
Aug	1989	111.4	112.0	124.6	—	13.67P	13.72P	13.09R	10.41R
Sept	1989	111.9	112.3	125.0	126.8	—	—	13.15P	10.46P

P = Preliminary **R** = Revised since last month

[1]US Bureau of Labor Statistics, Washington, D.C.: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents. Historical data is presented in Report 233.

[2]US Bureau of Labor Statistics, Washington, D.C.: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in Report 233.

[3]US Department of Commerce, Washington, D.C.: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted. Historical data is presented in Report 233.

[4]US Bureau of Labor Statistics, Washington, D.C.: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in Report 233.

© NUEXCO 1989

NUEXCO

CALENDAR

Nuclear Industry Calendar

1989	
Nov. 26–29	***Nuclear Energy Forum*** (Westin St. Francis, San Francisco, California), sponsored by the USCEA and ANS. Contact the USCEA Conference Office at 1-202-293-0770, or the ANS Meetings Department at 1-312-352-6611.
Nov. 26–Dec. 1	***1989 ANS Winter Meeting*** (Hilton Hotel, San Francisco, California). Contact the ANS Meetings Department at 1-312-352-6611.
1990	
Jan. 22-26	***Nuclear Fuel Cycle Committee*** (Las Vegas, Nevada), sponsored by the American Society for Testing and Materials. Contact Ms. Katharine Schaaf at the ASTM at 1-215-299-5529.
Mar. 4-8	***7th Pacific Basin Conference*** (Sheraton Harbor Island Hotel, San Diego, California), sponsored by the ANS. Contact the ANS Meeetings Department at 1-312-352-6611.
Mar. 25-28	***Fuel Cycle '90 Conference*** (Opryland Hotel, Nashville, Tennessee), sponsored by the US Council for Energy Awareness. Contact the USCEA Conference Office at 1-202-293-0770.
Apr. 8–12	***First Annual International High-Level Radioactive Waste Management Conference*** (Caesar's Palace Hotel, Las Vegas, Nevada), sponsored by the American Nuclear Society and American Society of Civil Engineers. Contact the ANS at Meeetings Department at 1-312-352-6611.
Apr. 9-11	***23rd JAIF Annual Conference*** (Kyoto, Japan). Contact Ms. Sachie Sugoh, Dept. of Planning and International Affairs, JAIF, at 03-508-9056.
Apr. 22-25	***INFO '90*** (Westin Hotel, Dallas, Texas), sponsored by the USCEA. Contact the USCEA Conference Office at 1-202-293-0770.
Sept. 5-7	***Uranium Institute 15th Annual Symposium*** (London, United Kingdom). Contact the UI at 44-1-225-0308.
Sept. 16-19	***Uranium Seminar '90*** (Hyatt Regency, San Antonio, Texas), sponsored by the USCEA. Contact the USCEA Conference Office at 1-202-293-0770.
Nov. 11-14	***Nuclear Energy Forum*** (Washington Hilton, Washington, D.C.), sponsored by the USCEA and ANS. Contact the USCEA Conference Office at 1-202-293-0770, or the ANS Meetings Department at 1-312-352-6611.

© NUEXCO 1989

NUEXCO

INTERNATIONAL ADVISORY COMMITTEE

J. Robert (Bob) Wolcott
Chairman
USA

* * *

T.J. (Tom) Barendregt
The Netherlands

O.J.C. (John) Runnalls
Canada

George J. Stathakis
USA

W. Bryan Webster
USA

Chris I. von Christierson
South Africa

Lars Halle
Sweden

James C.C. Stewart
United Kingdom

REPRESENTATIVES

AUSTRALIA:

James G. Munro
7 Nevada Street
North Balwyn, Victoria 3104
Australia
Telephone: (61-3) 857-6823
Telecopy: (61-3) 857-8258

JAPAN:

Kazuo Yokota
Japan Tech Services
Ohkura Building (3F)
1–4–10 Shiba Daimon
Minato-ku, Tokyo, Japan
Telephone: (81-3) 431-6031, 6025
Telecopy: (81-3) 434-6674
Telex: 242-5060 (JATECH J)

SOUTH AFRICA:

Chris I. Von Christierson
Southern Prospecting (Pty) Limited
Mailing Address:
Post Office Box 61409
Marshalltown 2107
Republic of South Africa
Street Address:
7th Floor, Marshall Place
66 Marshall Street
Johannesburg 2001
Telephone: (27-11) 834-4211
Telecopy: (27-11) 834-6343
Telex: 4-89878-SA

TAIWAN:

Dr. Steve H.K. Wang
Southeast Engineering Corporation
Yu-Ming Mansion
7, Roosevelt Rd., Sec. 1, 7th Floor
Taipei, 10757, Taiwan R.O.C.
Telephone: (886-2) 321-0216
Telecopy: (886-2) 394-2621
Telex: 11285 (SENCORP)

UNITED STATES:

Harold C. Lindberg
83-A Hardee Lane
Whispering Pines, North Carolina 28327
Telephone: (919) 949-3622
Telecopy: (919) 949-2626

Ralph O. Smith
141 Braemar Drive
Cheshire, Connecticut 06410
Telephone: (203) 272-6246
Telecopy: (203) 271-1346

© NUEXCO 1989

INTERNATIONAL HEADQUARTERS

Three Park Central, Suite 900
1515 Arapahoe Street
Denver, Colorado 80202

Telephone: (303) 899-4500
Telecopy: (303) 899-4555
Telex: 450202/NUEXCO